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Ten Steps for Improving Blood Pressure Control in New Hampshire: A Practical Guide for Clinicians and Community Partners

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Partners

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Dear Colleagues:

The mission of the New Hampshire Department of Health and Human Services is to join communities and families in providing opportunities for citizens to achieve health and independence. The Division of Public Health Services (DPHS) plays a key role by improving access to high quality services and disseminating evidence-based practices. With limited resources, we must be strategic in targeting health conditions and social determinants of health, and have a clear understanding of how we will measure progress or impact.

Prevention of heart disease and stroke is just one of DPHS' top ten health priorities, as indicated in the State Health Improvement Plan (NH SHIP). NH SHIP is a road map for improved health outcomes, which includes common metrics for tracking progress toward a shared goal across organizations. Together with clinical and community partners, a shared objective for Cardiovascular Disease is to reduce the percent of adults with high blood pressure from 31% (2011) to 26% by 2015 and 22% by 2020.[1]

In the fall of 2013, New Hampshire embarked on a test of rapid cycle public health funding called Million Hearts, a national initiative to prevent one million heart attacks and strokes by 2017. Responding to a national request for proposals from the Association of State and Territorial Health Officials, DPHS requested that the Institute of Health Policy and Practice at the University of New Hampshire act as a bona fide agent to apply for and manage this fast-paced initiative.

Relying on a proven model developed by Cheshire Medical Center/Dartmouth-Hitchcock Keene, supported through partnerships in many parts of the State, the New Hampshire Million Hearts Learning Collaborative was able to move the needle on hypertension control quite drastically. This approach confirms that when the health care delivery system works jointly with the public health system, we improve population health outcomes quickly and efficiently.

This manual reflects an intense year of work by dedicated professionals, who I am proud to call my colleagues. I urge you to consider this manual when attempting to implement hypertension control strategies within your own communities.

Respectfully,

José T. Montero, MD, MPH, MHCDS
Director, Division of Public Health Services,
NH Department of Health and Human Services

Focusing on Hypertension Makes Sense for New Hampshire

High blood pressure is the single most common chronic illness in the United States, affecting 50 million people.[2] The majority of Americans are aware of their high blood pressure and nearly 75% are being treated with medication. However, only 50% of American adults have achieved adequate blood pressure control, defined as a blood pressure below 140/90.[3]

Similar to the national rates, data from the Behavioral Risk Factor Surveillance System (BRFSS) indicate that the New Hampshire rate of hypertension is over 30%.[4] Heart disease is the second leading cause of death in New Hampshire, and the prevalence of hypertension has increased significantly from 23% (95% CI: 22%, 25%) in 2001 to 31% (95% CI: 29%, 32%) in 2011. Given the significant burden of heart disease, New Hampshire identified cardiovascular disease as a state health priority in its 2011 New Hampshire State Health Profile and seeks to implement proven strategies for reducing cardiovascular morbidity and mortality in its 2013 New Hampshire State Health Improvement Plan.[5,6] More specifically, New Hampshire has identified addressing the major risk factors, including hypertension, diabetes, tobacco use, and elevated cholesterol levels as priority issues.

Beyond acknowledging the importance of hypertension in New Hampshire, several state-level efforts demonstrate the need to integrate public health and clinical care to improve population health. The Health Promotion Disease Prevention Pillar Group of the New Hampshire Citizens Health Initiative (NHCHI) completed a Strategic Plan for Integrating the Work of New Hampshire's Public Health and Medical Care Systems in 2010.[7] The Plan was based on the premise that collaborative health promotion efforts involving public health and medicine play a critical role in reducing the burden of preventable disease in New Hampshire. Additionally, since 2012, the Medicine and Public Health Task Force of the New Hampshire Medical Society (NHMS) has been working to coordinate the collaboration of Society members with public health and community partners in activities that improve the overall health of New Hampshire residents, giving specific attention to the national Million Hearts[8] initiative, co-sponsored by the United States Department of Health and Human Services (US DHHS), the Centers for Disease Control and Prevention (CDC), and the Centers for Medicaid and Medicare Services (CMS), to prevent 1 million heart attacks and strokes by 2017. Appendix A includes a flyer outlining the Million Hearts initiative.

A specific example of integration from Cheshire Medical Center/Dartmouth-Hitchcock Keene (CMC/DHK) serves as the basis for the New Hampshire Million Hearts project. This county-level effort demonstrated that rapid, measureable improvement in blood pressure control was possible for a population of more than 12,000 people with hypertension. Beginning in January 2012, a comprehensive list of policy, system and environmental changes were enacted in clinical and community settings to improve blood pressure control to a level below 140/90 mmHg. Starting from 72% adequate control, the Keene health system saw steadily improved blood pressure control to 85% by July 2013. CMC/DHK's achievement was recognized by Million Hearts, CDC, and CMS with one of nine national Hypertension Control Champions Awards in 2013.

Using the success at CMC/DHK as its guide, the New Hampshire Division of Public Health Services (DPHS), in partnership with the Institute for Health Policy and Practice (IHPP) at the University of New Hampshire (UNH), developed a proposal to begin addressing hypertension in New Hampshire, an issue highlighted in the State Health Improvement Plan.[9] The scope of work was structured to replicate proven strategies at CMC/DHK, and to adapt them for New Hampshire's most urban communities – Manchester and Nashua.

From October 2013 to September 2014, a group of stakeholders from across New Hampshire received funding from the Association of State and Territorial Health Officials (ASTHO) to form a New Hampshire Million Hearts State Learning Collaborative. The goal of the Learning Collaborative was to focus on hypertension identification, control, and improvement.

The City of Manchester Department of Public Health (MDPH) and the Nashua Department of Public Health and Community Services (NDPHCS) led the community-based hypertension work in their respective regions, while engaging Manchester Community Health Center (MCHC) and Lamprey Health Care – Nashua (LHC-N) to address hypertension from a clinical perspective. Each municipality partnered with community-based organizations to provide additional support to patients with hypertension and to integrate care. A full listing of these partners can be found on pages ii and iii.

This manual is a compilation of the evidence-supported practices and lessons learned from the New Hampshire Million Hearts Learning Collaborative. This document can serve as a guide for other clinical-community partnerships as they strive to improve hypertension control for their populations.

How to Use This Guide

This manual was developed from the premise that improving a complicated health condition like hypertension requires solutions based on a multi-faceted approach. To affect change, providers and public health practitioners must:

- Understand the current health burden;
- Assess existing processes;
- Weigh possible best-practice interventions;
- Focus on data-driven decision-making; and
- Engage a community of stakeholders.

The ten chapters of this manual include easy to follow, pragmatic steps to implement a comprehensive approach to hypertension care originally developed by CMC/DHK. This approach was successful in improving hypertension control for the greater Keene community, and was successfully replicated in the communities of Manchester and Nashua.

The first seven steps are best implemented sequentially, whereas steps eight through ten can be undertaken anytime, as they involve patient and community engagement. However, considering that each medical practice and community is unique, the steps can be customized to accommodate the distinct degree of readiness or available resources.

The chapters are formatted with the following headings to help the user understand the rationale and the practical elements necessary to accomplish each step:

WHY?

Based on research or experience, why is this step felt to be a critical component of a comprehensive BP control improvement initiative?

HOW?

How did CMC/DHK develop and implement this step in their improvement efforts?

WHAT?

What did the pilot sites in Nashua and/or Manchester do in undertaking this step or what might another practice do to accomplish this step?

LESSONS LEARNED?

What special conclusions were drawn from New Hampshire's Million Hearts project regarding barriers to implementation and keys to success in the context of achieving change?

STEP 1: Engaging Providers and Staff

How to engage providers and staff by providing a tool for collecting feedback

WHY?

For an organization to successfully implement change, its key stakeholders must be engaged. In the case of New Hampshire's Million Hearts Learning Collaborative, the organizations recognizing the need of change were MCHC and LHC-N. Key stakeholders included providers and staff.

Benchmarking data from January 2014 revealed that 66% of adult patients with hypertension at MCHC and 69.5% of equivalent patients at the LHC-N had adequate blood pressure control (below 140/90). Though better than the national average, these rates are much lower than highest achieving settings.

The majority of Americans are aware of their high blood pressure and nearly 75% are being treated with medication. According to Yoon, Ostchega, & Louis, nation-wide only 50% of adults have achieved adequate blood pressure control, defined as a blood pressure below 140/90.[10] Many barriers to effective blood pressure control have been suggested in a review by Volpe & Dedhiya, including unhealthy lifestyle, inadequate patient education and awareness, inconsistency of provider clinical behavior, non-adherence to established treatment protocols, and non-compliance with medication.[11]

Provider and staff engagement was initiated through use of a brief survey. The tool served two purposes. It provided the organization with information, and, perhaps more importantly, it offered the providers and staff an opportunity and an outlet to share their perspectives on effective treatment strategies, clinical barriers, and potential solutions, which cultivated a sense of engagement in the process.

HOW?

In 2011, CMC/DHK, working in collaboration with the Dartmouth Prevention Research Center, created and administered a four-question multiple-choice survey. It was designed to take no more than five minutes to complete and can be administered in paper or electronic format.
The questions were developed using a review of literature and other evidence-based sources regarding lifestyle, as well as clinical and structural factors that impact hypertension control.[12,13] Questions and multiple choice options can be customized based on the unique needs of practices.

A short introduction describes the purpose of the survey – to help plan future interventions and messaging around the prevention and control of hypertension.

Responses should remain anonymous and results should be aggregated by provider and nurse groups.

STEP 1

The survey consists of the following questions:

1. Considering your patients with uncontrolled hypertension and using the list below, please choose three lifestyle factors that you feel contribute most to continued high blood pressure.
   - ☐ Excessive weight
   - ☐ Inadequate physical activity
   - ☐ Unhealthy diet
   - ☐ Excessive sodium
   - ☐ Smoking
   - ☐ Stress
   - ☐ Excessive alcohol

2. Considering your patient population with uncontrolled hypertension and using the list below, please select what you feel are the top 5 barriers for achieving adequate control for these patients.
   - ☐ Improper blood pressure measurement
   - ☐ No convenient way (or place) to follow blood pressure between office visits
   - ☐ Target of <140/90 is unrealistic given medical complexity of patients
   - ☐ Performance measure misses charted measurements in narrative dictation
   - ☐ Guidelines are not well known by providers and staff
   - ☐ Clinic-wide protocols are not established to follow the guidelines
   - ☐ Clinic-wide protocols are not adequate to meet guidelines
   - ☐ Clinic protocols to address HTN are not consistently followed
   - ☐ There is not enough time to follow clinic protocols
   - ☐ Patient does not understand hypertension and its causes
   - ☐ Patient does not understand health implications of hypertension
   - ☐ Patient does not understand ways to reduce hypertension
   - ☐ Patient is not concerned about health implications of hypertension
   - ☐ Patient does not understand importance of medication
   - ☐ Patient lacks financial resources to purchase medications
   - ☐ Medication is not taken as prescribed
   - ☐ Patient pressures provider into less aggressive medication dosing
   - ☐ Other: _____

3. What three approaches do you use most frequently with patients who have not gained adequate blood pressure control?
   - ☐ I provide printed educational materials
   - ☐ I make recommendations regarding lifestyle changes to my patients in a one on one meeting during their office visit
   - ☐ I refer the patient to the Nurse Clinic for education and follow up
   - ☐ I schedule additional appointments for the patient
   - ☐ I ask staff to follow up with patients who do not come in for follow-up appointments
   - ☐ I develop goals for improvement with my patients – we develop these together and monitor them over time
   - ☐ I ask patients to monitor their own blood pressure
   - ☐ I ask patients to bring in their blood pressure readings to appointments
   - ☐ I elicit cooperation of the patient's family in reinforcing care
   - ☐ Other: _____

4. Choose up to 5 resources you feel would most improve blood pressure control for your patients with hypertension.
   - ☐ Community-wide messaging campaign about hypertension prevention and importance of control
   - ☐ Evidence-based patient education materials consistent across CMC/DHK
   - ☐ Targeted nurse follow-up education for patients
   - ☐ An improved "Know Your Numbers" BP wallet card
   - ☐ Provider training regarding national treatment guidelines and algorithms
   - ☐ Revised clinic protocols for uncontrolled HTN patients
   - ☐ Agreed-upon clinic protocols for uncontrolled HTN patients
   - ☐ Assistance from pharmacists with patient consults and suggestions for providers
   - ☐ Evidence-based self-management or group management programs
   - ☐ Community-based lifestyle coaching available to patients
   - ☐ Nutrition classes targeted to DASH (fruits, vegetables, low fat, low sodium) diet
   - ☐ Additional community-based, accessible, affordable programs to promote exercise
   - ☐ Other:_____

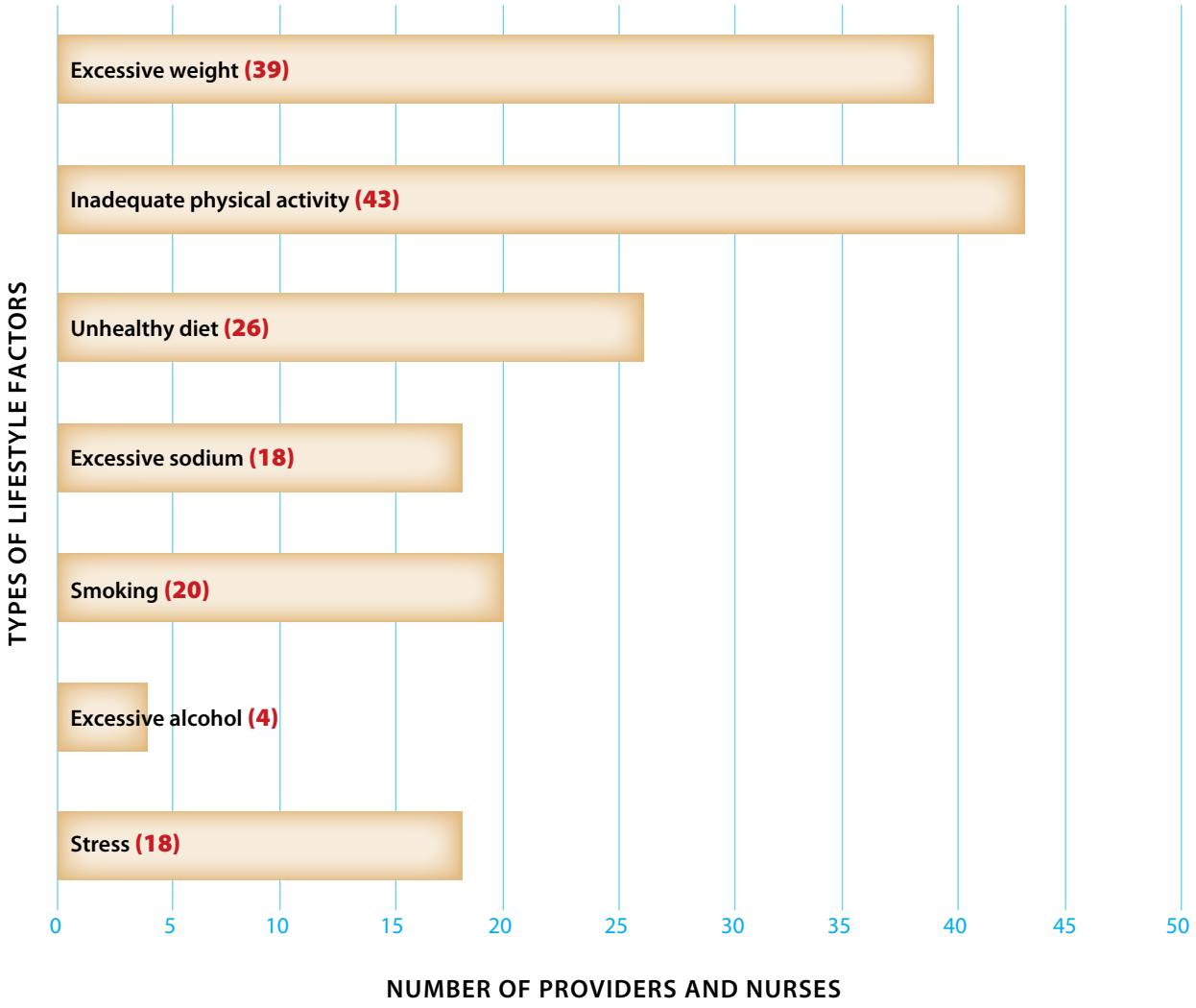
When administered to 30 nurses and 40 primary care providers in 2011, CMC/DHK had an 84% response rate with remarkable consistency between the two groups. Responses collected through this survey were displayed to staff in bar graphs and helped to inform the model developed by CMC/DHK. Responses include:

STEP 1

For question 1, *considering your patients with uncontrolled hypertension and using the list below, please choose three lifestyle factors that you feel contribute most to continued high blood pressure*, top responses, shown in Graph 1 below, included:

a. Inadequate physical activity
b. Excessive weight
c. Unhealthy diet

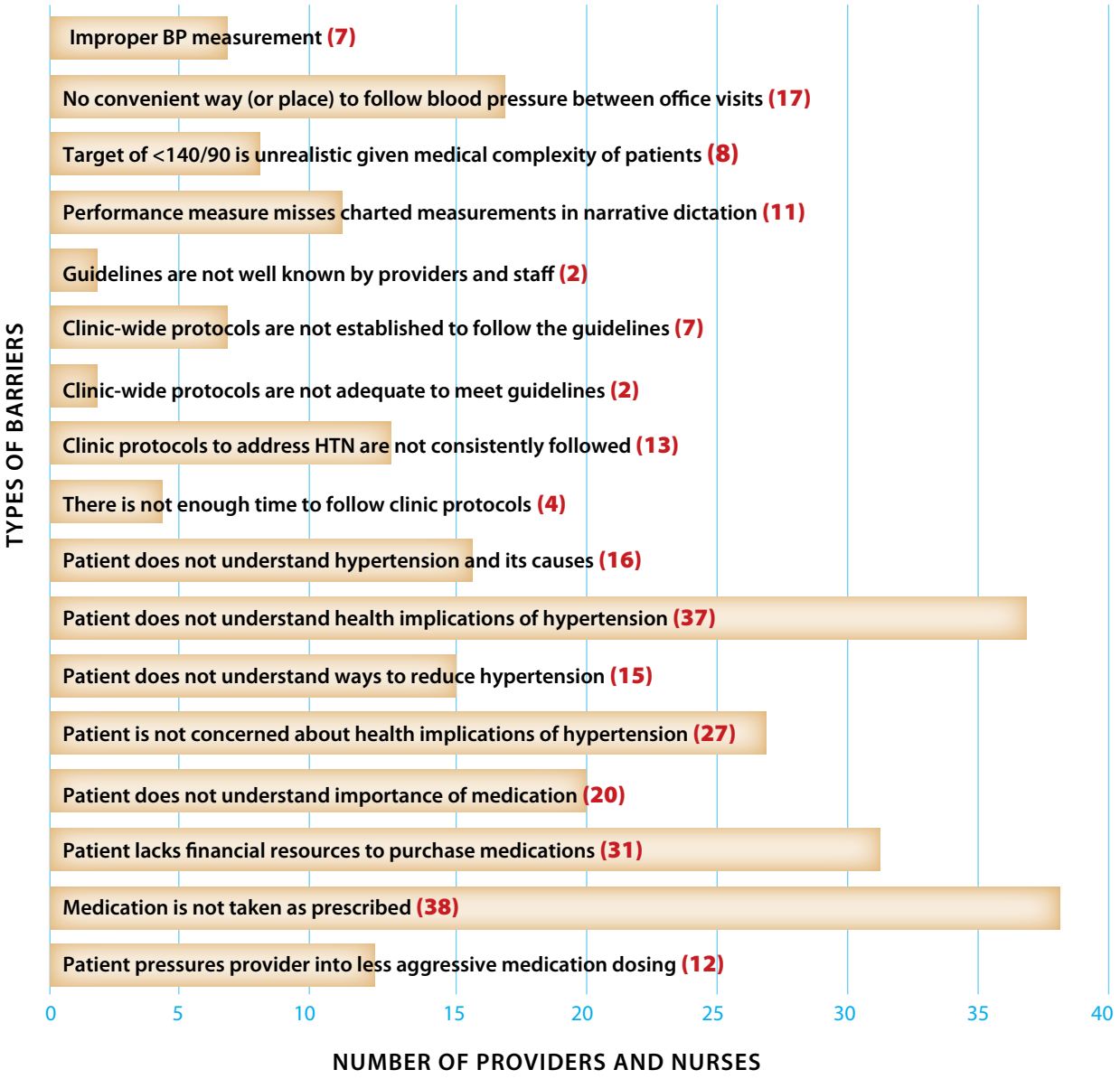
Graph 1: Lifestyle Factors That Contribute to Continued High Blood Pressure In Patients With Uncontrolled Hypertension



For question 2, *considering your patient population with uncontrolled hypertension and using the list below, please select what you feel are the top five barriers for achieving adequate control for these patients*, top responses, shown in Graph 2 below, included:

a. Medication is not taken as prescribed
b. Patient does not understand health implications of hypertension
c. Patient lacks financial resources to purchase medications
d. Patient is not concerned about health implications of hypertension
e. Patient does not understand importance of medication

Graph 2: Barriers for Achieving Adequate Control for Patients with Uncontrolled Hypertension



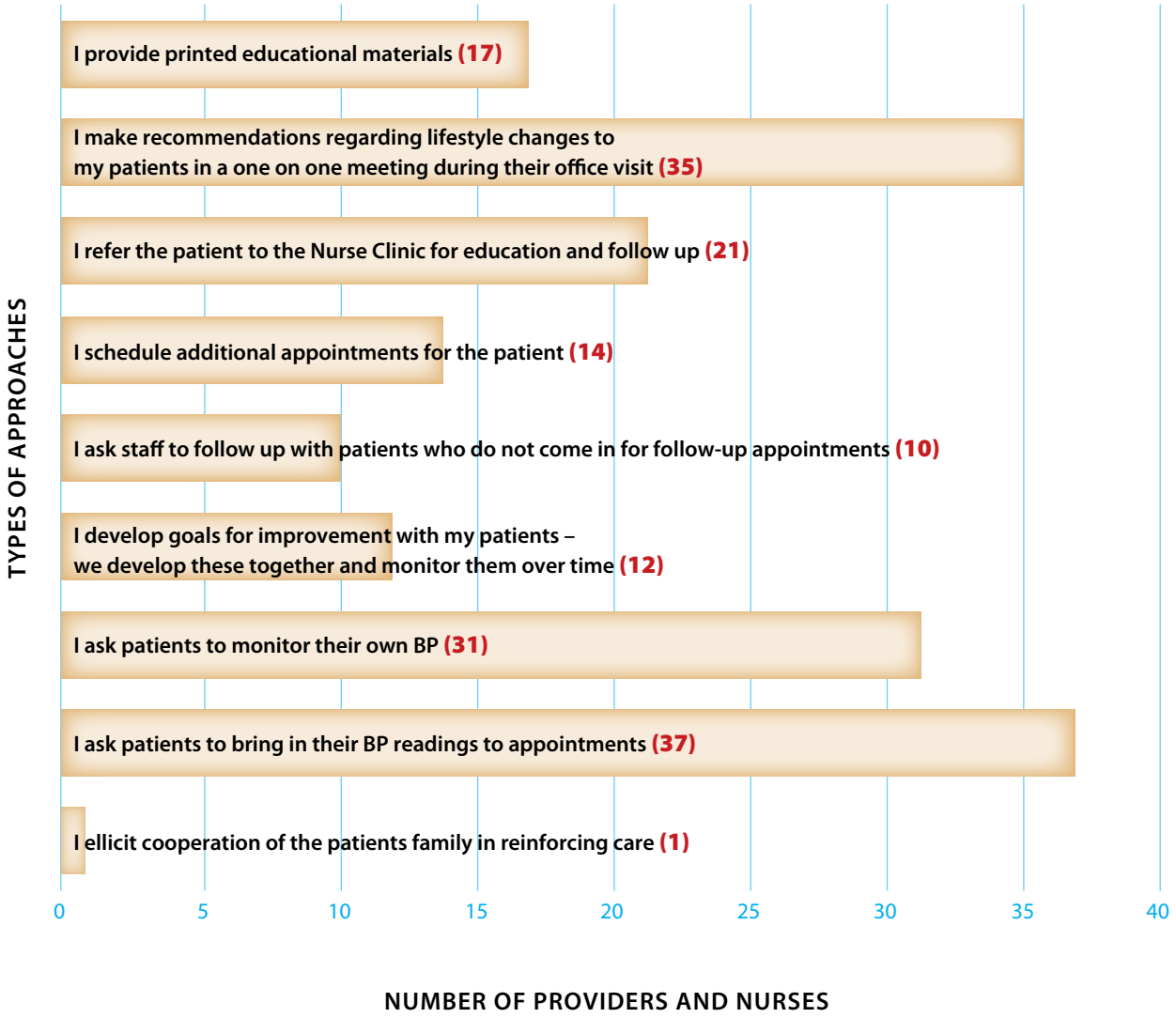
For question 3, *what three approaches do you use most frequently with patients who have not gained adequate blood pressure control*, top responses, shown in Graph 3 below, included:

a. I ask patients to bring in their blood pressure readings to appointments

b. I make recommendations regarding lifestyle changes to my patients in a one on one meeting during their office visit

c. I ask patients to monitor their own blood pressure

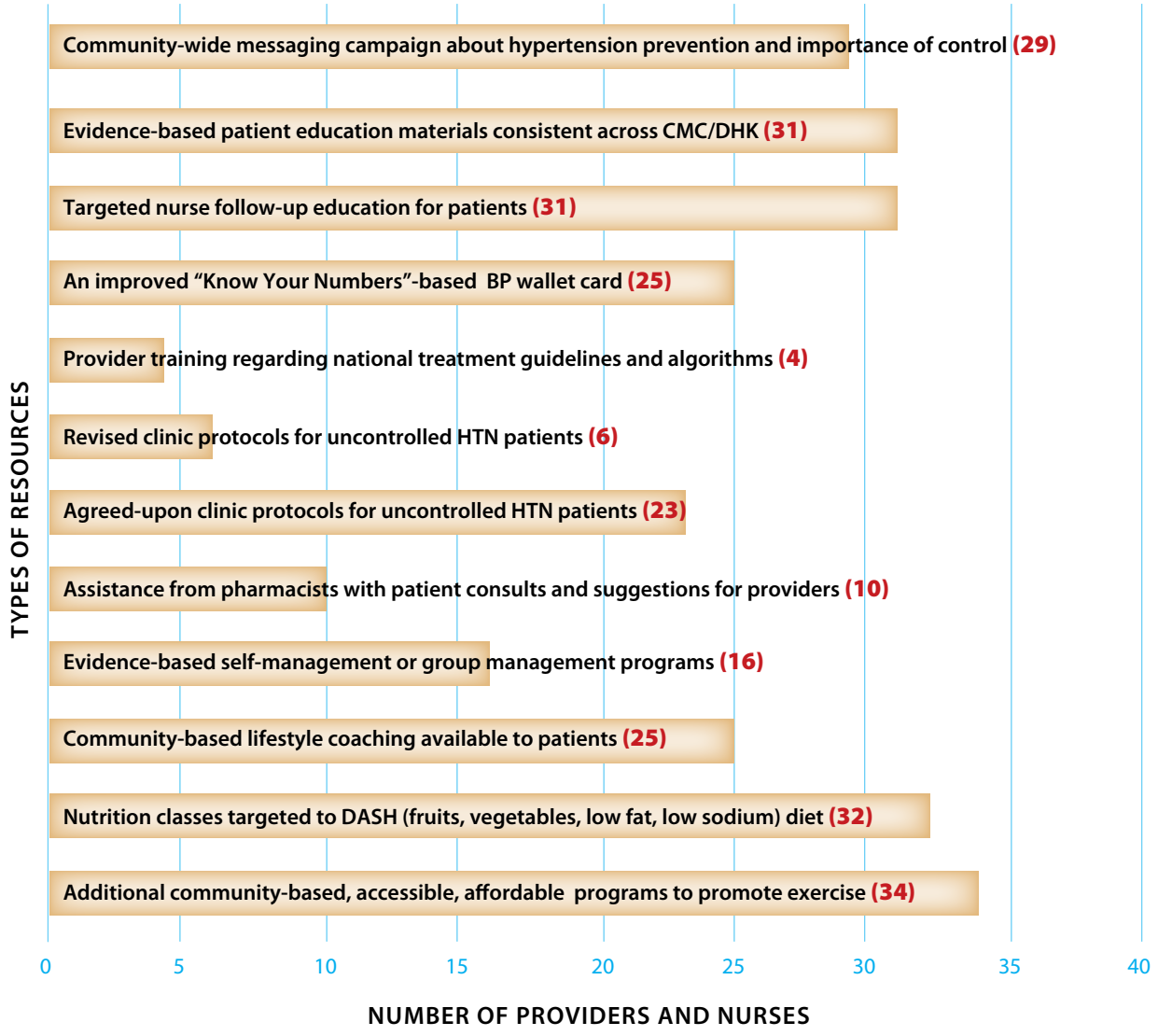
Graph 3: Approaches Taken With Patients Who Have Not Gained Adequate Blood Pressure Control



For question 4, *choose up to five resources you feel would most improve blood pressure control for your patients with hypertension*, top responses, as shown in Graph 4 below, included:

a. Additional community-based, accessible, affordable programs to promote exercise
b. Nutrition classes targeted to DASH (fruits, vegetables, low fat, low sodium) diet
c. Targeted nurse follow-up education for patients
d. Evidence-based patient education materials consistent across CMC/DHK
e. Community-wide messaging campaign about hypertension prevention and importance of control

Graph 4: Resources To Improve Blood Pressure Control in Patients With Hypertension



WHAT?

In November 2013, MCHC and LHC-N conducted their own provider and staff surveys. Responses are listed below, and were somewhat consistent with those given by the CMC/DHK respondents, suggesting that New Hampshire caregivers perceive similar challenges and needs.

Manchester Community Health Center

The MCHC questionnaire was administered to 34 nurses and primary care providers, with 12 responding, for a response rate of 35%.

The MCHC providers believed that excessive weight, inadequate physical activity, and unhealthy diet contribute most to uncontrolled hypertension in their patients.

When asked about the top barriers to adequate control in those patients with uncontrolled hypertension, the challenges identified included medications not being taken as prescribed, patients not understanding the health implications of hypertension, patients not understanding their hypertension and cause, with a tie between patients not being concerned about health implications of hypertension and patients lacking financial resources.

In attempting to gain improved hypertension control, the most frequent provider-initiated strategies were to recommend lifestyle changes, asking patients to monitor their own hypertension, scheduling additional office follow-up appointments, and to record results to share at provider appointments.

In terms of resources to improve hypertension control, the group identified nutrition classes, community-wide messaging, community-based exercise programming, patient education materials, and targeted nurse follow-up.

Lamprey Health Care – Nashua

The LHC-N questionnaire was administered to ten primary care providers and nurses and 80% completed the survey.

Responses are listed below, and are similar to responses collected at both CMC/DHK and MCHC.

The Nashua providers and staff believed that tobacco, unhealthy diet, and excessive weight were the lifestyle factors that contribute most to continued uncontrolled hypertension in their patients.

When asked about the top barriers to adequate control in those patients with uncontrolled hypertension, the challenges identified included concerns about the patient's lack of awareness, understanding, or concern regarding the health implications of hypertension. Additionally, there were concerns related to the financial aspect of effective medication management, as well as a lack of a convenient setting for hypertension follow-up appointments.

In attempting to gain improved hypertension control, the most frequent provider-initiated strategies were to recommend lifestyle changes, scheduling additional office follow-up appointments, asking patients to monitor their own hypertension, and to record results to share at provider appointments.

In terms of resources to improve hypertension control, the group identified additional nursing capacity to provide follow-up education, adopting clinic-wide protocols for care, providing nutrition and exercise programming, and lifestyle modification.

LESSON(S) LEARNED?

The responses from a brief questionnaire of providers and nurses should help to inform a feasible, cohesive, and collaborative plan of action that encourages cooperation and team work to effectively improve hypertension control rates in clinical settings. When administered early in a hypertension control improvement project it also serves as a simple tool for initial provider and staff engagement in the process.

STEP 2: Agreeing on a Shared Vision and Measures

How an aim statement and a defined measure can provide a common goal for all stakeholders

WHY?

Before working towards change can begin, a measure of success must be defined. Otherwise, how will anyone know change has taken place?

Impact is achieved when all participants tackling a complex challenge have a shared vision for change, including a common understanding of the problem, and a commitment to solving it through coordinated actions.[14] A well-crafted aim statement can provide a clear, shared vision to provide direction to the overall direction of the improvement effort.

HOW?

Answering these four guiding questions can help stakeholders create a concise aim statement:[15]

1. What will improve (be concrete and detailed)?
2. When will it improve (when will the outcome be accomplished)?
3. How much will it improve (how much change do you expect)?
4. For whom will it improve (who is the target population)?

WHAT?

Aim Statements

Generally speaking, one aim statement is sufficient. The New Hampshire Million Hearts Learning Collaborative felt that for this particular project, both a specific aim statement and a global aim statement were necessary:

> **Specific Aim**: Within 9 months, improve the rate of controlled hypertension by 5% among individuals 18-85 who are diagnosed with hypertension and are patients at the MCHC and LHC-N.

Global Aim: Integrate medicine and public health to build a foundation of sustained improvement of health through community partnerships by developing consistent, data-driven, evidence-based processes that can be expanded and institutionalized in communities statewide.

The specific aim addressed the group's desire to show measurable improvements in hypertension control rates. The global aim addressed the group's desire to incorporate a comprehensive, proven strategy to address change.

Choosing Measures

Defining the reporting measure is a vital step in measuring success, something that was reinforced with New Hampshire's Million Hearts experience. The collaborative's *specific aim* indicates that a 5% improvement was desired within the Million Hearts grant period.

The Million Hearts Learning Collaborative was funded by ASTHO, with support from CDC. The request for proposals (RFP) was specific in noting that reporting for Million Hearts would be done using quality measure NQF 18, which is the hypertension measure supported by CDC. This measure comes from the National Quality Forum (NQF), *a not-for-profit, nonpartisan, membership-based organization that works to catalyze improvements in healthcare*.[16] NQF 18 is described as follows:

Figure 1: NQF 18 Measure Description

	NQF 18 Measure
Numerator	Patients from the denominator with blood pressure measurement less than 140/90mm at the time of their last measurement
Denominator	Patients age 18-85 with diagnosed hypertension (must have been diagnosed with hypertension 6 or more months before the measurement date)
Comments	Excludes pregnant women and patients with End-Stage Renal Disease

Both MCHC and LHC-N are federally qualified health centers (FQHC). An FQHC is any organization that receives grant funding under Section 330 of the Public Health Service Act.[17] FQHCs report quality measures to the US DHHS Health Resources and Services Administration (HRSA). HRSA supports a different hypertension measure, which is part of the Uniform Data System (UDS). Although NQF 18 is similar to UDS, they are not identical:

Figure 2: UDS Hypertension Measure Description

	UDS Measure
Numerator	Patients from the denominator with blood pressure measurement less than 140/90mm at the time of their last measurement during the reporting year
Denominator	Patients age 18-85 with diagnosed hypertension, with at least 2 reportable medical visits during the reporting year (must have been diagnosed with hypertension before June 30th of the reporting year)
Comments	Patients who do not have a recorded measurement during the reporting year are considered to have failed performance measure; Excludes pregnant women and patients with End-Stage Renal Disease

In order to thoroughly understand baseline hypertension control rates, eventually leading to improvements, it was imperative that all stakeholders of the Learning Collaborative spoke the same data language. For the purpose of Million Hearts, that language was NQF 18.

LESSON(S) LEARNED?

When undertaking quality improvement projects, progress is tracked using defined measures. In many cases, a single indicator can be reported using a multitude of measures. To which organization does your practice report? Does that organization have a preferred/required measure? At both the State and Federal level there is growing consensus that hypertension control should be consistently measured using the standards of NQF 18. Choosing the correct measure and remaining consistent with its use is an imperative step in quality improvement work.

STEP 3: Understanding the Current Process and Flow

How outlining the current processes around the detection and treatment of high blood pressure can identify inconsistencies and offer opportunities for improvement

WHY?

Before existing processes or practices can be improved, they need to be understood. An emerging field of research, called improvement science, attempts to achieve quality improvement and increased patient safety by providing resources to guide providers and administrators in applying evidence-based strategies to their practice.[18] A variety of tools exist to help examine current approaches to care and to support organizations in envisioning and implementing change. These tools can help to temper the clinical tendency to jump to conclusions, which leads to short-sighted treatment solutions.

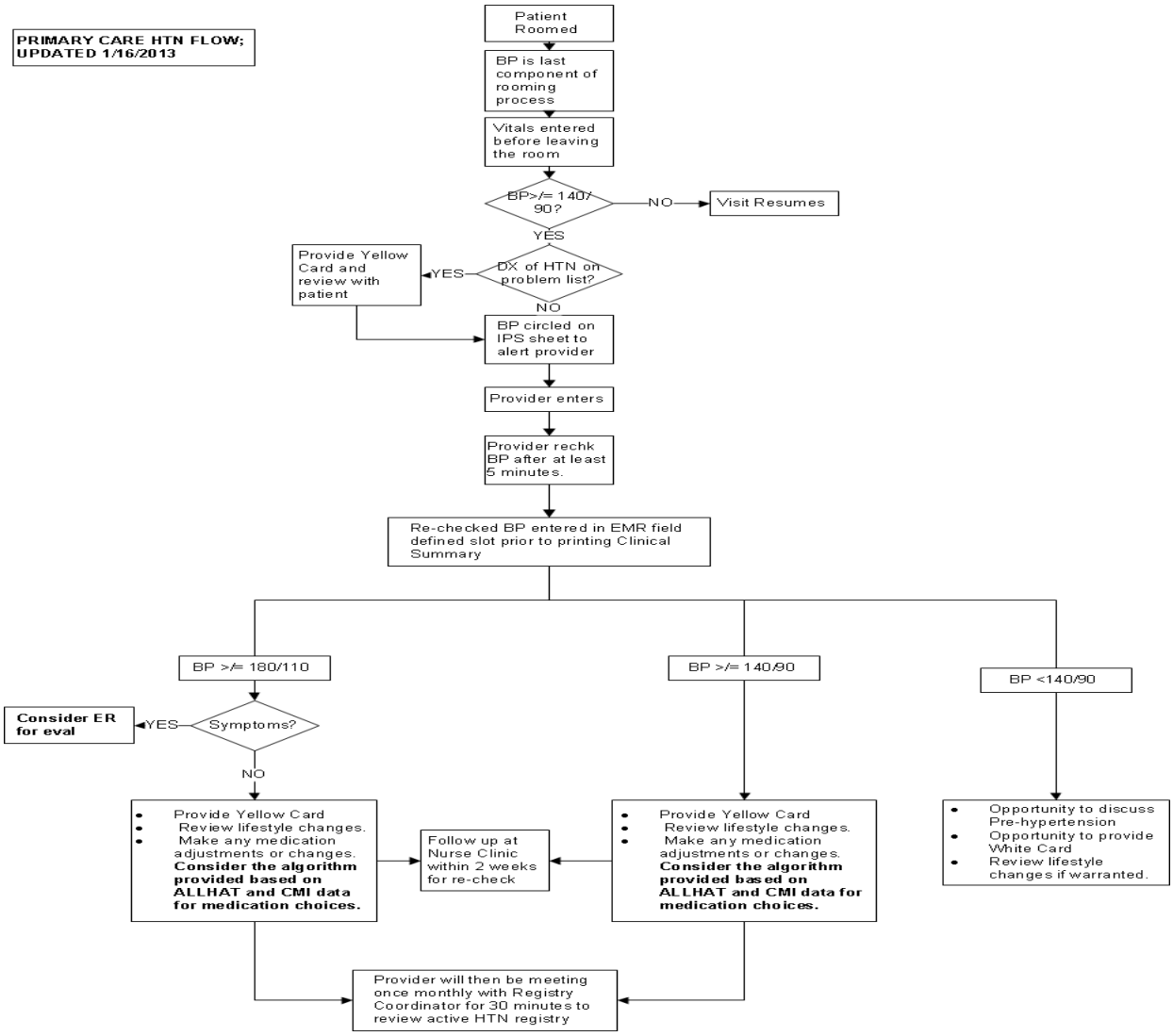
Public health has a longer history of embracing quality improvement theory and tools than clinical medicine does – especially in terms of program development, implementation, and evaluation. Many of these resources can be used by improvement teams to develop integrated solutions to a multitude of health challenges.[19]

HOW?

In the fall of 2012, a multi-disciplinary team at CMC/DHK met in several facilitated sessions, using quality improvement tools to understand current workflow processes and influences. Among the tools used were a *cause and effect diagram* (also called a fishbone) and *flowcharting*.

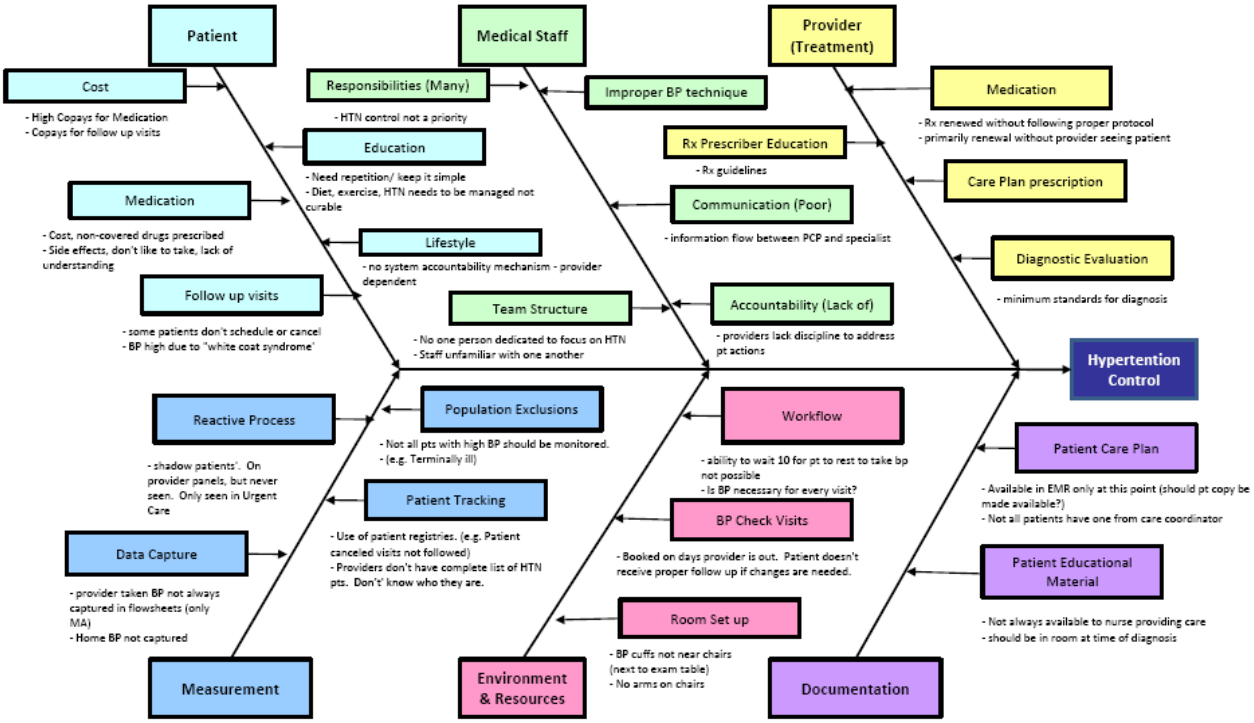
Flowcharting uses simple symbols to describe processes. Flowcharts are best created by those individuals who are on the front lines of the workflow, such as the medical assistants, nurses, and providers involved in the daily delivery of services. Once the current flow is completely diagramed, deviations from ideal (redundancies, inefficiencies, barriers) are often apparent. CMC/DHK's flowcharting is shown in Figure 3 below.

Figure 3: Simple Flowchart



Cause and effect diagrams, sometimes called fishbone diagrams, help to describe all the possible contributors to a given problem. The main arms (or "bones") of the diagram are labeled as main categories of influence. For the purpose of hypertension control, these arms might be labeled as Treatment, Patient, Medical Staff, Documentation, Measurement, and Environment. Since each practice and/or community is unique, each needs to generate its own diagram. CMC/DHK's fishbone diagram is shown in Figure 4 below.

Figure 4: Sample Fishbone for Hypertension



The CMC/DHK team used the flow chart and cause and effect diagrams to document every piece of their current clinical workflow, which helped them to identify areas of improvement.

Flow chart and cause and effect diagram templates are provided in Appendix B.

WHAT?

The CMC/DHK team made the following observations after completing its flowcharting and fishbone process which helped to direct subsequent improvement activities:

1. Inconsistent work flow across primary care medical homes and individual providers;
2. Inconsistent or absent engagement of specialty care departments;
3. Inconsistent documentation (dictation and vital flow sheet), especially of second blood pressure reading;
4. Inconsistent documentation of blood pressure readings by providers in electronic health record (EHR);
5. Inconsistent blood pressure measurement technique;
6. Multiple brands of equipment, lack of timely maintenance, and inconsistent calibration added undesirable variability to the accurate measurement of blood pressure;

7. Existence of a cost barrier to blood pressure re-checks and a lack of a consistent, centralized process for timely follow-up of adjustments in treatment;
8. No agreement on universal triage and treatment algorithms among providers;
9. Unnecessary variation in the process for flow staff to notify provider of elevated blood pressure; and
10. Lack of staffing resources to effectively manage patient registries.

This process led to new hypertension process flow algorithms (to be discussed in a later chapter), which were used in Manchester and in Nashua to help refine their treatment protocols for Million Hearts.

LESSON(S) LEARNED?

Use of the flowchart and cause and effect diagrams provided CMC/DHK with a list of initial opportunities for improvement that helped to focus future work.

Taking the time to understand current practice and workflow can identify inconsistencies and help to target evidence-supported solutions to dysfunctional processes.

STEP 4: Creating Algorithms for Hypertension Care

How guidelines provide for consistency and application of best-practices across care settings

WHY?

For decades, evidence-supported guidelines for screening, triage, and pharmacologic treatment for hypertension have been widely shared with clinicians.[20] Unfortunately, the existence of these guidelines does not translate into consistent care. Clinical resistance to universal protocols by primary care and specialty medicine is based on the idea that guidelines reflect "cookbook medicine," and are viewed as an erosion of provider autonomy.[21,22] However, it has been shown that variability in care leads to unnecessary expense and poorer patient outcomes. Standardizing care through the purposeful agreement and adoption of clinical management protocols is one approach to ensure patients receive evidence-supported care across care settings. Dr. Tom Friedan, Director of the CDC, has strongly advocated for this approach as a key to eliminating variability in care.[23]

HOW?

The Joint National Committee (JNC) on the Prevention, Detection, Evaluation and Treatment of High Blood Pressure represents consensus recommendations from dozens of professional and governmental health organizations that periodically publish their findings in both scholarly reports and also shorter, more clinically-actionable, provider reference guides. The CMC/DHK team used the JNC-7 recommendations as a starting point for crafting its own treatment and triage algorithms to guide care across primary and specialty offices. The team also engaged community partners, such as an independent nonprofit home healthcare agency, in the process. In December 2013, the JNC-8 recommendations were released as updates to prior JNC-7 recommendations. CMC/DHK has not yet modified its approach to meet these recommendations, instead electing to maintain the simpler and more stringent JNC-7 targets since these are familiar to patients, staff, and providers and are already reflected in existing printed materials.

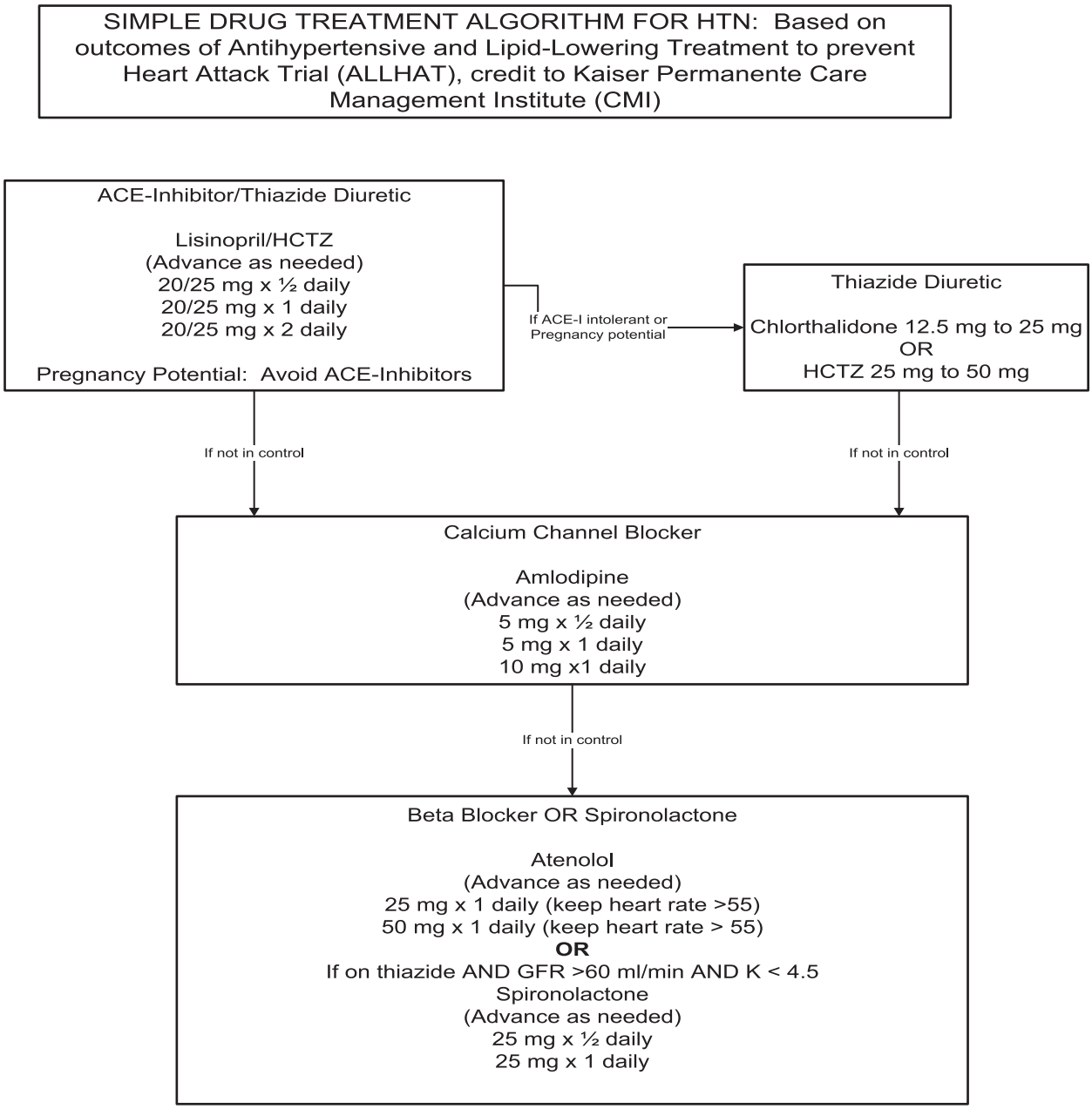
WHAT?

When looking back at Chapter 1: Engaging Providers and Staff, CMC/DHK's survey of provider and nurse perceptions indicated that one barrier to effective treatment of hypertension patients was the absence of standardization protocols. The team proposed two evidence-supported algorithms to pilot.

Medication Treatment Algorithm

Below is a simple medication treatment algorithm adopted by the CMC/DHK team after endorsement by staff cardiologists and taken directly from published evidence-supported recommendations.

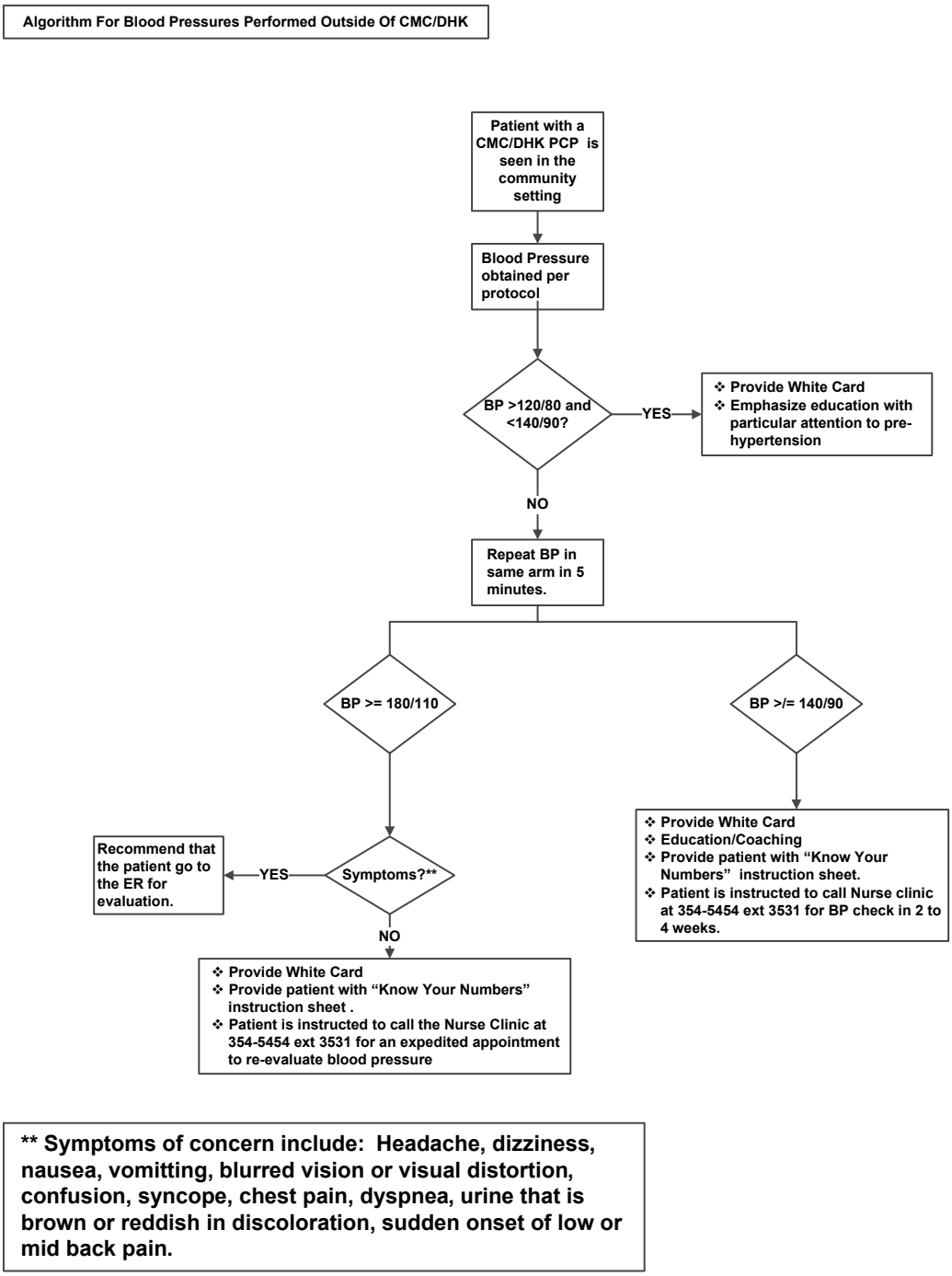
Figure 5: Medication Treatment Algorithm



Triage Algorithm

Below is the triage algorithm adopted by the CMC/DHK team for use with patients who are screened and identified in community settings. This algorithm was based on best-practice recommendations from the literature, with the final version reflecting consensus of the team with agreement of local community-based screening partners:

Figure 6: Sample Triage Algorithm



**** Symptoms of concern include: Headache, dizziness, nausea, vomitting, blurred vision or visual distortion, confusion, syncope, chest pain, dyspnea, urine that is brown or reddish in discoloration, sudden onset of low or mid back pain.**

The team at CMC/DHK learned that triage protocols could be modified for use with community partners, so that patients received consistent advice and reinforcement regardless of where they had a blood pressure screening performed.

Implementing Treatment Algorithms in Manchester and Nashua

For New Hampshire's Million Hearts work, CMC/DHK provided MCHC and LHC-N with the algorithms developed for medication use and for triage. Both sites vetted the algorithms with their Medical Directors and then implemented them center-wide through changes in policy, describing them in detail during departmental meetings.

LESSON(S) LEARNED?

Prior to implementing universal algorithms CMC/DHK experienced a significant number of patients being sent unnecessarily to the emergency department or to the cardiologist for elevated blood pressure readings that did not meet the threshold for such intensive and expensive care. Evidence-supported consistency in treatment and triage throughout the community helps eliminate variability in care and provides both patients and providers with clear courses of action to guide best care. This should also lead to more cost-effective care.

STEP 5: Ensuring Accuracy of Blood Pressure Measurement

Why using best-practices to maintain blood pressure equipment and standardizing technique for blood pressure measurement are important early steps in improving detection and control of hypertension

WHY?

In typical medical practice, manual blood pressure measurement is viewed as a simple and repetitive task to be completed swiftly, before delving into what are felt to be higher priority items. This mindset contributes to inaccurate blood pressure measurement that can be attributed to a combination of faulty equipment and poor technique.

HOW?

When CMC/DHK began its hypertension quality improvement work, the quality improvement team knew it needed to start at a very basic level. Looking back at Chapter 2: Agreeing on a Shared Vision and Measures, it is clear that consistency in measurement is crucial. Errors in measurement can have undesired effects on numbers and could lead to inappropriate care decisions. Because of this, CMC/DHK chose to look at blood pressure measurement technique and equipment as the basis for its work.

The team began reviewing literature in search of evidence-based techniques to achieve accurate blood pressure measurement, identifying seven best practices to improve patient care. Studies suggest that disregarding these practices can result in inadvertent 5-10 mmHG increases in blood pressure readings:

1. Equipment – Be sure the blood pressure cuff is intact and that the manometer needle reads "0" (within oval area) prior to inflation. If the needle is outside of the oval area then the manometer requires recalibration. Note: blood pressure cuffs should be calibrated regularly according to manufacturer's direction in addition to any time the manometer needle is outside the "0" range.
2. Appropriate Rooming – The patient should not feel rushed, be in significant pain, or have a need to urinate.
3. Remove Clothing – Be sure that the blood pressure cuff is not applied over clothing or that tight clothing has not been pushed up the arm creating a tourniquet-like effect.
4. Correct Cuff Size – If a cuff is too small, the blood pressure will be inaccurately high. Choose the appropriate cuff size based on printed circumference ranges printed on the inner side of the cuff.

5. Positioning – Both the patient and the provider should be quiet. The patient should be seated with his or her back supported, the cuffed arm outstretched at heart-level and supported, with legs uncrossed and both feet flat on the floor.
6. Slowly Deflate Cuff – Deflation rates of 2-3 mmHg per second are recommended as they result in the lowest variability between readings.[24,25,26]
7. Repeat – If the initial blood pressure reading was greater than 140/90, the provider should wait 3-5 minutes and then repeat the measurement. In the majority of cases, the second reading is lower than the first.

WHAT?

All manometers are checked for calibration with each use and cuffs are inspected for excessive wear and to ensure they are inflating properly. Recalibration usually should occur yearly or sooner depending on the manufacturer's recommendations.

Additionally, the team began developing a training module to ensure all CMC/DHK providers were measuring blood pressure using best practices. This module consists of a PowerPoint curriculum and written post-test, as well as a practical competency component, assessed through direct observation. These materials may be obtained by contacting Dr. Fedrizzi (one of this manual's editors) at CMC/DHK.[27]

At CMC/DHK, the policy is to reassess competency in blood pressure technique each year. Similarly, MCHC and LHC-N have also chosen to add this training module into annual competency training.

Note: In order to better evaluate whether team members increased their skills and knowledge after the training, a pre-test can be used prior to implementation of the module.

LESSON(S) LEARNED?

Accurate blood pressure measurement is critical, as all future treatment decisions rely on responding to the systolic and diastolic numbers obtained.

Universal adoption of best practices in blood pressure measurement by all NHMS providers is one goal of the Medicine and Public Health Task Force as it works to advance the Million Hearts goals of optimizing hypertension prevention, detection, and control.

STEP 6: Sharing Provider Data Dashboards

How sharing data among providers and care teams results in more positive outcomes

WHY?

When attempting great change within a community, stakeholders often reference the collective impact model. While this model is most commonly applied to large-sector, cross-sectional initiatives, it can also be applied in other ways – like smaller scale public health interventions. One of the core conditions of that model indicates that data should be widely shared in order to achieve the greatest improvements.[28]

Quality improvement success is tied to data. One way to share data is through a provider data dashboard. A provider dashboard visibly displays patient panel outcomes data in a public way. "Public" can be defined as narrowly or as widely as desired, whether that is internal to a provider team, an entire practice, or more broadly to patients. A provider dashboard serves to identify top and lower performers for a particular outcome. Through further analysis, a provider dashboard may lead to a better understanding of what concrete provider behaviors tend to produce better patient outcomes. Providers can be reluctant to embrace data transparency. Often times, they voice concerns about differing disease acuity between panels, and that focusing on one outcome diverts attention from others.[29] Though these concerns might occasionally be true, experience has shown that patient outcomes tend to improve when data is shared among peers.

HOW?

The CMC/DHK team worked to develop its monthly primary care provider dashboards utilizing data from its EHR. CMC/DHK has an internal patient data analyst that can generate real time dashboards (and registries – see Step 7) at the request of providers.

MCHC and LHC-N dashboards were compiled from their EHRs. A dashboard may also be compiled by using external data reporting entities such as commercial insurers and CMS.

WHAT?

In developing provider dashboards for MCHC and LHC-N, practices chose to replicate CMC/DHK's method to capture data existing in EHRs.

The health centers partnered with the Community Health Access Network (CHAN) for assistance in developing their provider dashboards. CHAN, a Health Center Controlled Network (HCNN), has developed and supports an integrated clinical and administrative system infrastructure for its eleven

FQHC members, which includes MCHC and LHC-N. Central to CHAN's focus has been the automation of the primary care health record. The health record is linked to the GE Centricity Practice Management system and shares a common reporting tool, a robust data warehouse. CHAN developed a provider dashboard report, which pulls EHR data from the data warehouse and resides on the CHAN report server and can be accessed by MCHC and LHC-N.

A sample portion of this hypertension provider dashboard is included below. It provides the total number/percentage of patients with hypertension, the total number/percentage of patients with controlled hypertension, and the total number/percentage of patients with uncontrolled hypertension, and it does this by provider.

Figure 7: Sample Provider Dashboard for Hypertension

CHAN
COMMUNITY HEALTH ACCESS NETWORK

Criteria: Pts grouped by Site, with Active Dx of HTN (401)*
aged 18-85 yrs w/1 or more med visits during past yr and diagnosed w/HTN prior to 6 mos before today's date
(Excluded: PN Patients)

		Total	Pts with HTN Controlled (<140/90)	Pts with HTN not controlled
Total		100.00% 891	66.55% 593	33.45% 298
Nashua Area Health Center - LHC	Total	100.00% 891	66.55% 593	33.45% 298
	Provider A	100.00% 5	60.00% 3	40.00% 2
	Provider B	100.00% 13	84.62% 11	15.38% 2
	Provider C	100.00% 1	100.00% 1	0.00% 0

A provider dashboard can help administrators gauge which providers are in need of additional resources to support his or her patient populations. For example, when LHC-N reviewed its provider dashboard for the first time, it was determined that the provider with the lowest percentage of patients with adequate hypertension control would receive extra resources.

This provider dashboard is just one version of the many provider dashboards being created and utilized across the state.

LESSON(S) LEARNED?

Dashboards provide clinically-relevant information in a simple manner for descriptive or comparative purposes.[30] Experiences at CMC/DHK, MCHC, and LHC-N have shown that dashboards raise provider awareness of population-level health status of their patients and motivate a healthy degree of provider competition and action that leads to better patient outcomes.

STEP 7: Managing Patient Registries

How using real-time patient listings can focus provider attention on needed care

WHY?

A registry is a visible and actionable list of timely, patient information organized in such a way as to highlight particular care needs. Before the utilization of registries, a provider's perspective of care was focused on the individual patient in the office at a particular moment in time. In contrast, a registry gives providers a view of their entire patient panel, which can be hundreds of patients. A registry provides a population-level overview of gaps in evidenced-supported care and allows for proactive outreach to patients outside the typical office visit encounter.[31,32]

HOW?

CMC/DHK recognized that a provider and Registry Coordinator working together to systematically "manage the registry" could address dozens of patient needs regarding poorly controlled hypertension in a very short time (less than one hour). Treatment methods might include recommending follow-up visits for blood pressure rechecks, advising adjustments in medications or confirming medication compliance, and reinforcing lifestyle improvements. Over time, teams learned that additional chronic disease care management and preventive care needs could be added to the registries to provide opportunities to advise needed immunizations, recommended screenings, and lifestyle modification such as smoking cessation.

Though the CMC/DHK, MCHC and LHC-N registries were compiled from EHRs, a registry could also be abstracted from paper records using simple spreadsheet software or even paper and pencil. A basic flowchart outlining elements of registry management is included in Appendix C. A sample job description for a Registry Coordinator can be found in Appendix D.

WHAT?

MCHC and LHC-N again looked to CMC/DHK when developing their own hypertension patient registries. CMC/DHK provided a template design, containing many more data fields than necessary for just hypertension management, with the idea that this patient registry model could be used to manage patient needs more comprehensively, and possibly provide a way to manage other chronic diseases.

The sites again partnered with CHAN for assistance in report development. They worked together to develop a reporting format that would work for both locations, choosing to also include data fields not typically reviewed for hypertension management. CHAN was able to create patient registries based on diagnosis codes and then capture data from the EHR to create a panel or registry that can be used for pre- and post-visit planning.

Manchester Community Health Center

Given the multicultural, multilingual population of patients served by MCHC, with 47% of visits requiring translating services, it was important to include non-clinical data to support care decisions.

Below is a sample of a comprehensive patient registry created for MCHC, as shown in Figure 8. Indicators captured in this registry include:

- Race
- Ethnicity
- Language
- Insurance Status
- Diabetes Diagnosis
- Hypertension Diagnosis
- Smoking Status
- Date of Last Visit
- Date of Next Appointment
- Last Blood Pressure Value
- Last HbA1C Value
- Transportation Needs
- Mental Health Diagnosis
- Last BMI
- Self-Management Goals

Figure 8: Sample Hypertension Patient Registry

Case Management Tool for Registry Management (Million Hearts Campaign Objective 1.2)

Criteria: Pts grouped by Site, with Active Dx of HTN (401) aged 18-85 yrs w/1 or more med visits during past yr and diagnosed w/HTN prior to 6 mos before today's date (Excluded: PN Patients or ICD-585.6)*

CHAN

	Race	Ethnicity	Language	Insurance	Diabetic?	HTN?	Smoker?	DATE LAST VISIT	DATE NEXT APPT	LAST BP VALUE	LAST A1C VALUE	Need transportation?	MH DX?	LAST BMI VALUE	SELF MGMT GOALS
Manchester Community Health Center															
Patient 1	53Yrs White	Non-Hispanic	English	SFS 1 - 100% Discount/$15 Nominal Fee	N	Y	N	06/18/2014	08/27/2014	120/60			N	28.97	N
No Outreach Documented															
Recent Hospitalization and FU OV:															
HTN Active Meds:															
DM Active Meds:															
Patient 2	47Yrs White	Non-Hispanic	English	SFS 1 - 100% Discount/$15 Nominal Fee	N	Y		05/20/2014	08/20/2014	110/60			Y	37.99	N
No Outreach Documented															
Recent Hospitalization and FU OV:															
HTN Active Meds:	FUROSEMIDE 20 MG TABS														
DM Active Meds:															

This version of the registry can be exported to Excel so that columns can be displayed or hidden as desired, depending on the health care team's goals.

In terms of registry management, MCHC's work is spearheaded by a registered nurse who coordinates the Center's Patient Centered Medical Home Project. Support is provided by Community Health Workers, who assist in managing hypertension for patients who speak Spanish or Arabic.

Lamprey Health Care - Nashua

While MCHC staff was comfortable working with such an expansive listing of data fields, others may find it overwhelming. To accommodate this, CHAN was also able to create the report with functionality to provide less information, called *Registry-Lite*. Indicators captured in this registry include:

- Last Blood Pressure Value
- Date of Next Appointment
- Provider Comments

LHC-N chose to implement the hypertension registry using the approach of *Registry-Lite.* The site began using this registry with one provider, and then expanded use with other providers over time. They plan to augment *Registry-Lite* slowly, adding data fields one at a time as staff becomes more comfortable with the tool.

In terms of registry management, LHC-N also utilizes a registered nurse to lead the work. The nurse is supported by a Medical Assistant, a Translator, and a Data Coordinator.

LESSONS LEARNED?

Patient Registries provide a system to collect uniform data points about each patient and can be categorized by disease, condition, or other definition to evaluate specific outcomes. The use of a hypertension registry is believed to be one of the most important strategies used by CMC/DHK in effectively managing its hypertension patients.

Although work in Manchester and Nashua mimicked the model of care developed by CMC/DHK, each site implemented it in its own way, showing that this model is customizable depending on needs of the clinical site as well as needs of the community.

STEP 8: Consistent Communication and Celebrating Success

How clear communication about the project and celebrating successful work can lead to clinical spread and positive outcomes

WHY?

Ensuring effective collaboration among multiple partners requires ongoing communication so that all stakeholders understand the shared vision, expectations, activities, and outcomes data involved in the collective effort.[33] Consistency of written materials makes it easier for providers, staff, and patients alike to share the same evidence-supported messaging and care expectations. Celebrating early success can help to maintain the momentum of an initiative by sustaining and growing staff and community engagement in shared achievement.[34]

HOW?

CMC/DHK used a variety of internal channels such as department meetings, newsletters, and written charters for outlining the improvement team's charge; shared electronic files for all project materials; and used a PowerPoint-based "storyboard" that chronicled the process' improvement milestones as they occurred. Through transparency of data dashboards, the campus followed the monthly progressive improvement in CMC/DHK hypertensive patient control data. CMC/DHK also developed two blood pressure wallet cards with a complementary blood pressure brochure (discussed in Step 9) that became the primary patient education and engagement tools across care settings and the community.

The blood pressure improvement work was also nominated and ultimately won the CMC/DHK Chairman's Award, with all team members sharing in the recognition, and which included a small monetary award.

WHAT?

Communication efforts around New Hampshire's Million Hearts work took place at a project management level, site-level, and community level. In terms of project management level communication, efforts around Million Hearts were communicated through bi-monthly articles in the NHMS's monthly newsletter and presentations to constituent groups through the NHCHI. The group also took advantage of peer-to-peer calls and meetings offered by ASTHO for states participating in the Million Hearts initiative.

These opportunities allowed New Hampshire to discuss its approach, solicit feedback, and to consider next steps based on methods rolling out in other states.

This manual will serve as a dissemination tool for this work.

Manchester

In terms of site-level communication, one tactic used to share success is through use of staff meetings. MCHC kept its staff abreast of positive outcomes through discussion and center-wide emails. Additionally, high performing providers were provided financial incentives.

Nashua

The Nashua community chose to communicate about its Million Hearts work through the development of a project fact sheet. Partners from LHC-N and NDPHCS Public Health worked together to create a flyer about the project to ensure consistent communication about the efforts for the duration of the project. A copy of this fact sheet can be found in Appendix E. LHC-N shares its clinical success internally during staff meetings.

LESSONS LEARNED?

Funding opportunities in public health appear to be trending in the direction of completing more work in less time, and with less money. Considering this high-pressure, low-resource model, public health practitioners must communicate about their work to cultivate partnerships, pool resources, and improve health outcomes in their communities.

STEP 9: Engaging Patients

How a simple, inexpensive card proved to be the best tool to achieve patient engagement

WHY?

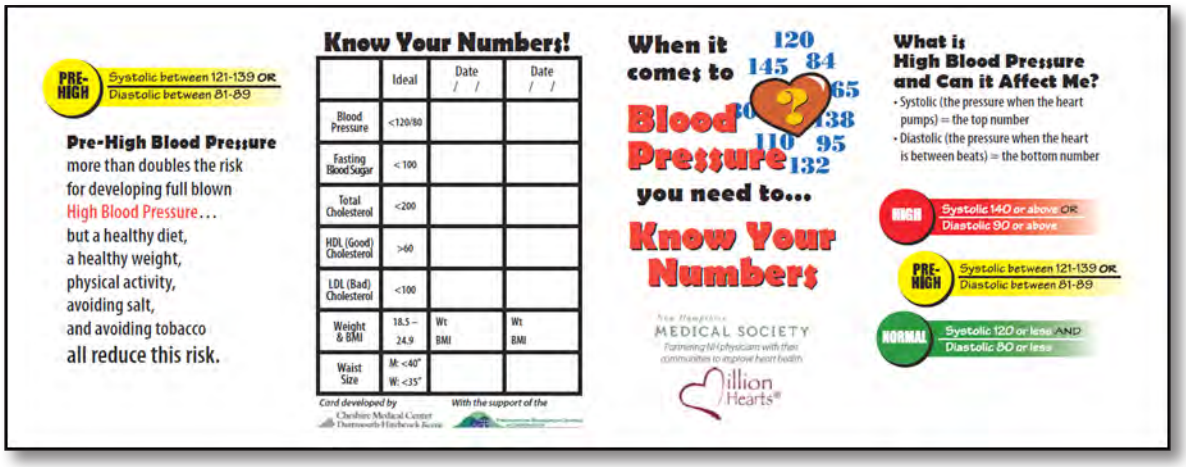
Among the many reasons considered to be barriers[35] to effective treatment of hypertension, a few can be eliminated through enhanced patient outreach and education. Specifically, these barriers are unhealthy lifestyle, inadequate patient education and awareness, and identification of occult disease. To effectively address hypertension within a community, patients must be considered a partner in the treatment strategy. Patient engagement is crucial.

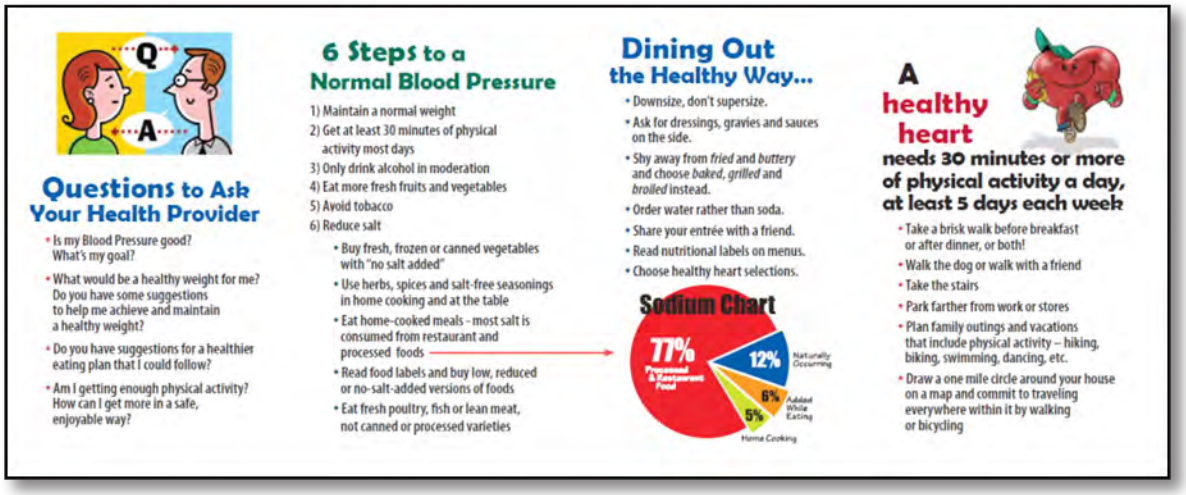
HOW?

Million Hearts (Prevention) Wallet Card

To raise awareness about the importance of hypertension and control within the community, CMC/DHK needed a tool that could be distributed to patients that would educate them about hypertension, provide guidance about making healthy lifestyle choices, and engage them in understanding their biometric numbers. CMC/DHK developed a foldable wallet card to do this after investigating simple, inexpensive patient education and engagement tools as part of a collaborative project with the Prevention Research Center at Dartmouth. The original wallet card is an 8-panel, white card distributed to non-hypertensive patients by providers during clinical visits. The goal of this card is to assist patients in preventing hypertension. The wallet card's messaging is based on existing models[36,37] considered to be best practices in creating awareness about blood pressure in a community population.

Figure 9: Million Hearts (Prevention) Wallet Card





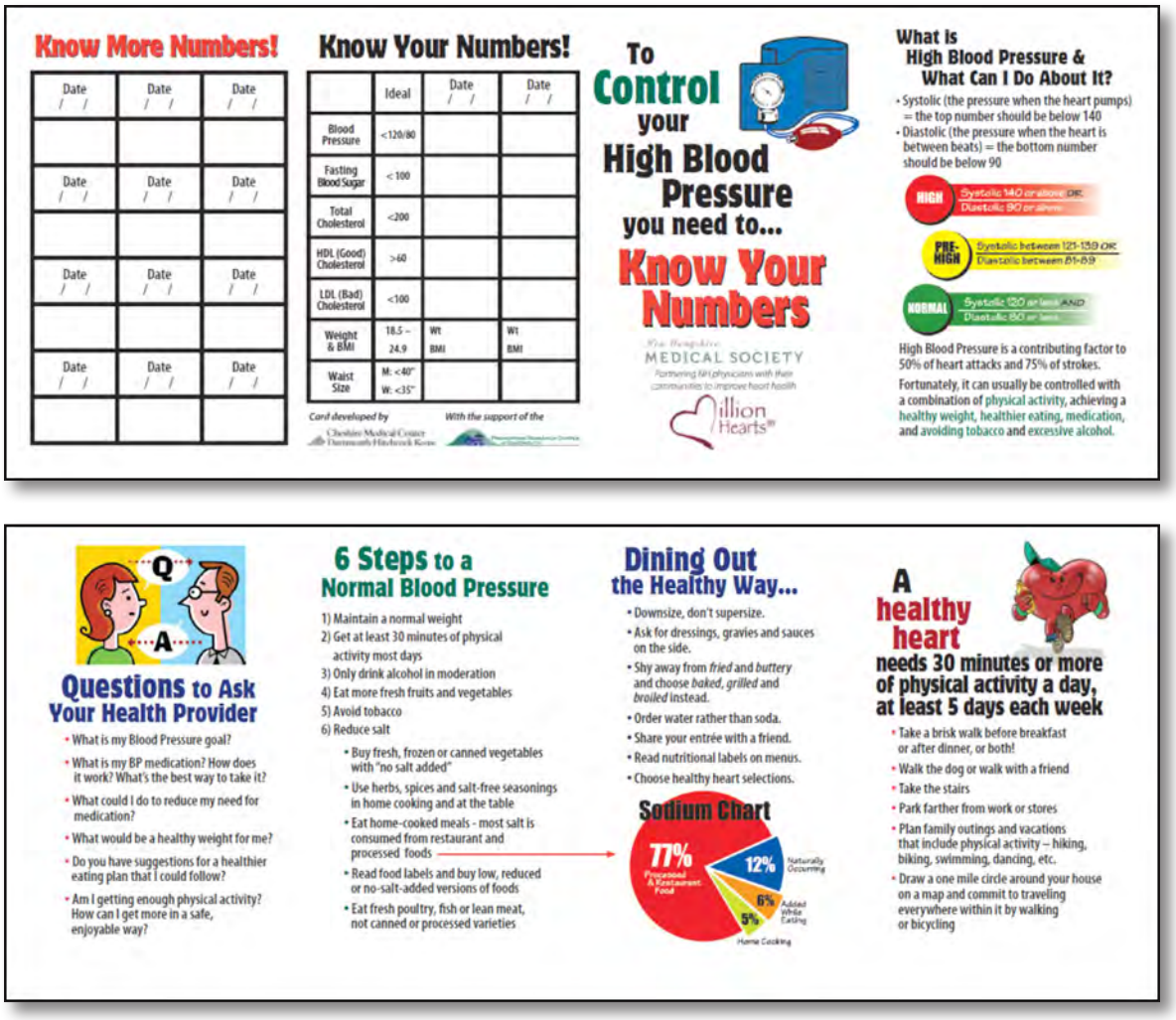
Use of the wallet card began as a pilot program in two worksites for a period of three months. Participants were drawn from a convenience sample. Fifty adults who saw the worksite nurse at any time during the first month of the pilot study were considered to be enrolled in the pilot.

Data analysis revealed that most people accepted the card and were optimistic that it might help them improve their health. Most returned with the card over three visits up to one month apart. A large number of "normal" participants were identified as having pre-high blood pressure, allowing the opportunity for a brief educational conversation. And finally, by the third contact more than half had made some positive change in lifestyle and nearly 6 in 10 had shared the card with someone.

Million Hearts (Control) Wallet Card

The positive analysis of this pilot has encouraged CMC/DHK to expand the distribution of the cards to other settings and to create another card targeted to those with identified high blood pressure, to help them gain better control. This card is formatted similarly to the prevention card, but printed on yellow cardstock to distinguish it from the other version.

Figure 10: Million Hearts (Control) Wallet Card



In November 2012, the cards were featured at the CDC's Prevention Research Center Summer Seminar Series as a patient engagement tool to be used in clinical and worksite settings.

CMC/DHK also developed a hypertension brochure that complemented the wallet card. The brochure's back panel is designed to prompt conversation between a provider and patient to assist in developing a simple lifestyle improvement plan. The brochure was embraced by local partners and purposefully replaced other existing hypertension resources available within the community so that all settings – YMCA, Senior Center, worksites, and home health agencies – relied on one consistent message. The brochure can be found in Appendix F.

WHAT?

Following the success of the pilot, use of the wallet cards expanded across CMC/DHK as well as the Keene community, along with guidance on how to use them most effectively.

The cards were designed as a patient engagement tool for clinical interactions. Each time a card is given to a patient by a provider, it is to be used as a tool to begin a brief therapeutic conversation to educate the patient about hypertension as well as the importance of healthy lifestyle choices. The following simple scripting is suggested to guide conversation, which is based on the card's traffic light design (green is normal, yellow is pre-hypertension, and red suggests possible hypertension):

- If the patient's blood pressure reading is in the red (>140/90), identify the helpful features of the card and refer to established triage processes for abnormal values.
- If the patient's blood pressure reading is in the yellow (>120-80 but <140/90), explain this as a "borderline" value that is putting unnecessary wear and tear on the body. Identify the helpful features of the card that may assist in normalizing future readings.
- If the patient's blood pressure reading is in the green (<120/80), reinforce positive health behaviors, reminding the patient that there are still ways to improve. Suggest that the patient share the card within his or her social circle.

For New Hampshire's Million Hearts work, the communities of Nashua and Manchester followed CMC/DHK's lead to better engage patients. Both MCHC and LHC-N agreed that it was important to incorporate wallet cards into their outreach in both clinical and community settings. In addition to distributing the prevention and wallet cards in English, they also translated the cards to Spanish and Portuguese (and are working to develop an Arabic card), to better accommodate their diverse patient population.

The wallet cards have been embraced by the NHMS's Public Health Task Force. NHMS has committed to printing wallet cards for physician members for the duration of the Million Hearts initiative. The cards were allowed to be co-branded with the NHMS and Million Hearts logos and have been made available to NHMS physician members free of charge.

LESSONS LEARNED?

In order to achieve change in hypertension control, patients must be active partners in their care. Providers are not able to provide effective treatment if self-care is a barrier. Patient engagement is of the utmost importance in the treatment of hypertension, and potentially, in treating other chronic conditions.

STEP 10: Fostering Community-Clinical Collaboration

Integrating health care through community-based partnerships with public health, physical activity, and nutrition resources lead to maximum impact

WHY?

Strong evidence from the Community Preventive Services Task Force indicates that barriers to health improvement are decreased through effective community-clinical collaboration, which increases communication across sectors; improves referrals and tracking; and leads to enhanced coordination of services for individuals.[38]

Several efforts in New Hampshire demonstrate the State's understanding of the need to integrate public health and clinical care to improve community health. In 2005, Governor John Lynch convened the New Hampshire Citizen's Health Initiative (NHCHI) as a long-term, collaborative effort to improve the health of New Hampshire citizens. The current pillar projects of NHCHI are Health Payment Reform, Medical Home, and Health Promotion and Disease Prevention (HPDP). Since 2007, HPDP has been working to address the major underlying causes of death and disability in New Hampshire (unhealthy eating, sedentary lifestyle, tobacco use, and unhealthy alcohol use—all risk factors related to heart health). Recognizing that both public health and clinical care play critical roles in reducing the burden of preventable disease, in 2009 HPDP began investigating New Hampshire-based health promotion and disease prevention projects/programs involving both sectors. HPDP grounds its work in promoting public health and health care integration approaches to improve population health through evidence available in the literature and from the field, and has developed a tool entitled *Medical Care and Public Health System Integration: A Practical Guide,* and a primer for clinicians entitled *The Clinician's Role in Integrating Medicine and Public Health to Improve Individual and Population Health*.

HOW?

CMC/DHK's hypertension control work is a prime example of the integration of medicine and public health. In addition to the clinical interventions outlined in earlier chapters, CMC/DHK took a two-fold multidisciplinary approach to engage community members around this issue.

In addition to the wallet cards, CMC/DHK developed partnerships with local community agencies, such as a nonprofit home health care organization and the YMCA. Patients were able to access blood pressure checks through these agencies as a convenience, and with the wallet cards, they were able to document the readings to share with their providers. The cards, however, provided more than just a vessel to share information. The cards acted as a therapeutic tool to begin a conversation with the patient each time

a blood pressure reading was taken. Since all the community partners were working together, patients received consistent messaging about the importance of controlled blood pressure.

As demonstrated in CMC/DHK's work, public health and primary care play significant roles in providing for the health of individuals, communities and populations. As the nation moves toward a new landscape of health care, the integration of public health and primary care will present unique opportunities to improve health.

WHAT?

Through New Hampshire's Million Hearts funding, the communities of Manchester and Nashua identified ways to comprehensively address hypertension within their communities.

Manchester

MDPH partnered with MCHC in the fall of 2013 to develop a sustainable plan for hypertension control within the greater Manchester community. As MCHC took the lead clinically, MDPH tackled the community integration pieces to bring attention to the need for risk factor reduction, in addition to clinical interventions.

The first goal for MDPH was to increase access to hypertension screenings within the community. MDPH began offering free, walk-in clinics at the health department during regular business hours, Monday through Friday. However, to improve access throughout the city to those without transportation, MDPH partnered with Catholic Medical Center's Parish Nurse Program. Eleven Parish Nurse Clinics, located strategically across the City, participated in the Million Hearts Initiative by providing access to blood pressure screening services via free, walk-in clinic hours.

All MDPH Public Health Nurses and all Parish Nurses received training on obtaining accurate blood pressure measurements and 100% passed the competencies developed by CMC/DHK. Nurses were equipped with wallet cards, available in English, Spanish, and Portuguese. The cards contain basic information about reducing risk of heart disease and stroke. Cards are used to engage individuals in conversation about healthy lifestyle choices following hypertension screenings. Nurses are able to record that day's reading, and give the card to the patient, who will be able to use the card to track future blood pressure readings.

Additionally, MDPH worked with two local organizations, the Granite YMCA - Downtown Manchester Branch and the Organization for Refugee and Immigrant Success (ORIS), to increase access to affordable places for recreation and healthy food sources. The YMCA generously provided a reduced-access membership offered to all Million Hearts patients of Manchester Community Health Center and their family members. This membership can be used to access YMCA facilities without any restrictions, and costs only $10 per month. Additionally, the YMCA provided MHD and MCHC with five family memberships to distribute as necessary. Each site can provide five families with temporary memberships to help build momentum for creating healthier behaviors. The YMCA also has the ability to provide a report of facility usage to the provider to track referrals and encourage patients who have increased their physical activity levels.

The partnership with ORIS brings locally grown produce to center city Manchester. ORIS works with immigrant and refugee groups in New Hampshire, helping them to become self-sufficient through farming. These local farmers organize a weekly farm stand on the MCHC campus to provide community members with an opportunity to purchase fresh fruits and vegetables without leaving the city. The farm

stand is equipped with EBT/SNAP technology to enable customers to utilize their SNAP (food stamp) benefits. In addition, through outside funding obtained by ORIS, all EBT/SNAP transactions are provided a 100% match ($1 for $1) to support the purchase of additional fruits and vegetables. This concept is known as a Double Value Coupon Program, and is supported locally by Wholesome Wave and the New Hampshire Food Bank. ORIS has the ability to track sales via EBT/SNAP benefits at the farm stand location to quantify access to affordable food sources.

Nashua

NDPHCS partnered with LHC-N in the fall of 2013, to develop a sustainable plan for hypertension control within the Nashua community through improving access to blood pressure screenings, providing education to help reduce the risk of heart attacks and strokes, identifying undiagnosed hypertensive individuals, and linking individuals to primary care.

NDPHCS and LHC-N began their hypertension work by recognizing the need for all individuals to be linked to a permanent medical home. Historically, one of the challenges in providing community-based blood pressure screenings has been the lack of a referral mechanism when a client is identified with hypertension. Clients without primary care providers and/or health insurance have few referral options other than to seek care at local hospital emergency departments or urgent care centers. Through this partnership, a protocol was formalized to streamline the patient referral and enrollment process so that individuals without access to primary care could become permanent patients at LHC-N.

As a next step, NDPHCS expanded its offering of hypertension screenings. They began offering free, walk-in blood pressure screenings twice weekly. Additionally, they augmented all existing community outreach clinics to include hypertension screenings for all patients, regardless of the type of clinic being offered. Considering the fact that many hypertensive patients are undiagnosed, offering this type of screening to all patients has been very effective.

All NDPHCS Public Health Nurses received training on obtaining accurate blood pressure measurements and 100% passed the competencies developed by CMC/DHK. Nurses were equipped with wallet cards, available in English, Spanish, and Portuguese. The Nashua Million Hearts clinics were launched on February 7, 2014, *Wear Red Day*.

LESSONS LEARNED?

The partnership between the MDPH and MCHC, as well as the partnership between NDPHCS and LHC-N, are prime examples of how the integration of public health and primary care can lead to sustainable models of care, which can be replicated to improve health outcomes for communities. It is important for these types of efforts to think "upstream" in addressing health risk factors and barriers to healthy lifestyles along with improvements in clinical care.

Utilizing evidence-based public health interventions aligned with data-driven clinical care resulted in dramatic change for New Hampshire's hypertension patients. MCHC moved its control rate from 66% to 75% over the course of the year, and LHC-N improved from 69.5% to 72%.

For many years, public health services have been provided in "silos", based on traditional funding streams, and medical care rarely extends beyond health care walls to the broader community. With the health care arena in rapid transition, it will be imperative to embrace a shift in traditional thinking to one which partners primary and preventive care with public health to support a system of community care coordination. Evidence-based public health interventions and sound referral systems will be components of the new terrain, leading to evidence-based, sustainable models of care.

Appendix A: Million Hearts Fact Sheet

Million Hearts™

Be one in a MILLION HEARTS™

Preventing 1 million heart attacks and strokes over 5 years

Cardiovascular Disease in the U.S.

Cardiovascular disease, a broad term for all diseases that affect the heart or blood vessels, includes heart attack and stroke as well as conditions such as high blood pressure, coronary artery disease, and aortic aneurism.

- Together, heart disease and stroke are among the most widespread and costly health problems facing the nation today, accounting for more than $444 billion in health care expenditures and lost productivity in 2010 alone.
- Many major risk factors—including blood pressure, cholesterol, smoking, and obesity—are controllable, and there are many important ways to lower risk of cardiovascular disease.

About

Million Hearts™ is a national initiative to prevent 1 million heart attacks and strokes in the U.S. over the next 5 years. Launched by the Department of Health and Human Services (HHS) in September 2011, it aligns existing efforts, as well as creates new programs, to improve health across communities and help Americans live longer, more productive lives. The Centers for Disease Control and Prevention (CDC) and Centers for Medicare & Medicaid Services (CMS), co-leaders of Million Hearts™ within HHS, are working alongside other federal agencies and private-sector organizations to make a long-lasting impact against cardiovascular disease.

The Issue

Heart disease and stroke are the first and fourth leading causes of death in the United States, making cardiovascular disease responsible for 1 of every 3 deaths in the country. Americans suffer more than 2 million heart attacks and strokes each year, and everyday, 2,200 people die from cardiovascular disease. Further, heart disease and stroke are among the leading causes of disability in our country, with more than 3 million people reporting serious illness and decreased quality of life.

Our Goals

Preventing 1 million heart attacks and strokes by 2017:

- **Empowering Americans to make healthy choices** such as preventing tobacco use and reducing sodium and trans fat consumption. This can help reduce the number of people who need medical treatment such as blood pressure or cholesterol medications to prevent heart attacks and strokes.
- **Improving care** for people who do need treatment by encouraging a targeted focus on the "**ABCS**"—**A**spirin for people at risk, **B**lood pressure control, **C**holesterol management and **S**moking cessation—which address the major risk factors for cardiovascular disease and can help to prevent heart attacks and strokes.

Our Support

Million Hearts™ is a public-private initiative that involves multiple federal agencies and key private organizations, including the American Heart Association, the American Pharmacists' Association, the YMCA, Walgreens, and UnitedHealthCare, among others. Over the course of its 5-year lifetime, Million Hearts™ hopes to secure commitment and participation from many more partners in health care, public health, industry, and government.

Collectively, these partnerships will help Million Hearts™ leverage and advance existing investments in cardiovascular disease prevention.

Appendix A: Million Hearts Fact Sheet

Examples of Million Hearts™ activities:

- Educational campaigns to increase awareness about heart disease prevention and empower patients to take control of their heart health.
- Use of health information technology and quality improvement initiatives to standardize and improve the delivery of care for high blood pressure and high cholesterol.
- Community efforts to promote smoke-free air policies and reduce sodium in the food supply.

Benchmarks for Success

Indicator	Baseline	2017 goal
Aspirin use for people at high risk	47%	65%
Blood pressure control	46%	65%
Effective treatment of high cholesterol (LDL-C)	33%	65%
Smoking prevalence	19%	17%
Sodium intake (average)	3.5g/day	20% reduction
Artificial trans fat consumption (average)	1% of calories/day	50% reduction

How To Be One in a Million Hearts™

Preventing 1 million heart attacks and strokes in the next 5 years will require commitment from everyone—health care providers, pharmacies, hospitals, employers, communities, and individuals too. There are steps that each person can take to help the nation reach this goal. Million Hearts™ is asking Americans to sign the Million Hearts™ pledge at **millionhearts.hhs.gov** and make a commitment to:

- **PREVENT** heart disease and stroke in your families by **UNDERSTANDING** the risks.
- **GET UP** and **GET ACTIVE** by exercising for 30 minutes several days a week.
- **KNOW** your **ABCS**:
  - Appropriate Aspirin Therapy
  - Blood Pressure Control
  - Cholesterol Management
  - Smoking Cessation
- **STAY STRONG** by eating a heart-healthy diet that is high in fresh fruits and vegetables and low in sodium, saturated and trans fats, and cholesterol.
- **TAKE CONTROL** of your heart health by following your doctor's instructions for medications and treatment.

Visit **millionhearts.hhs.gov** for more information about the Million Hearts™ initiative.

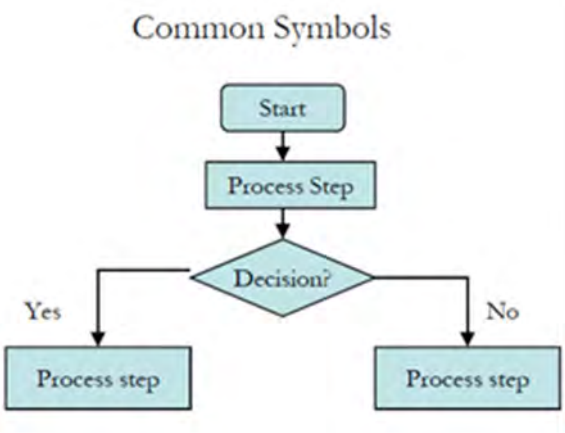
Stay connected

facebook.com/millionhearts

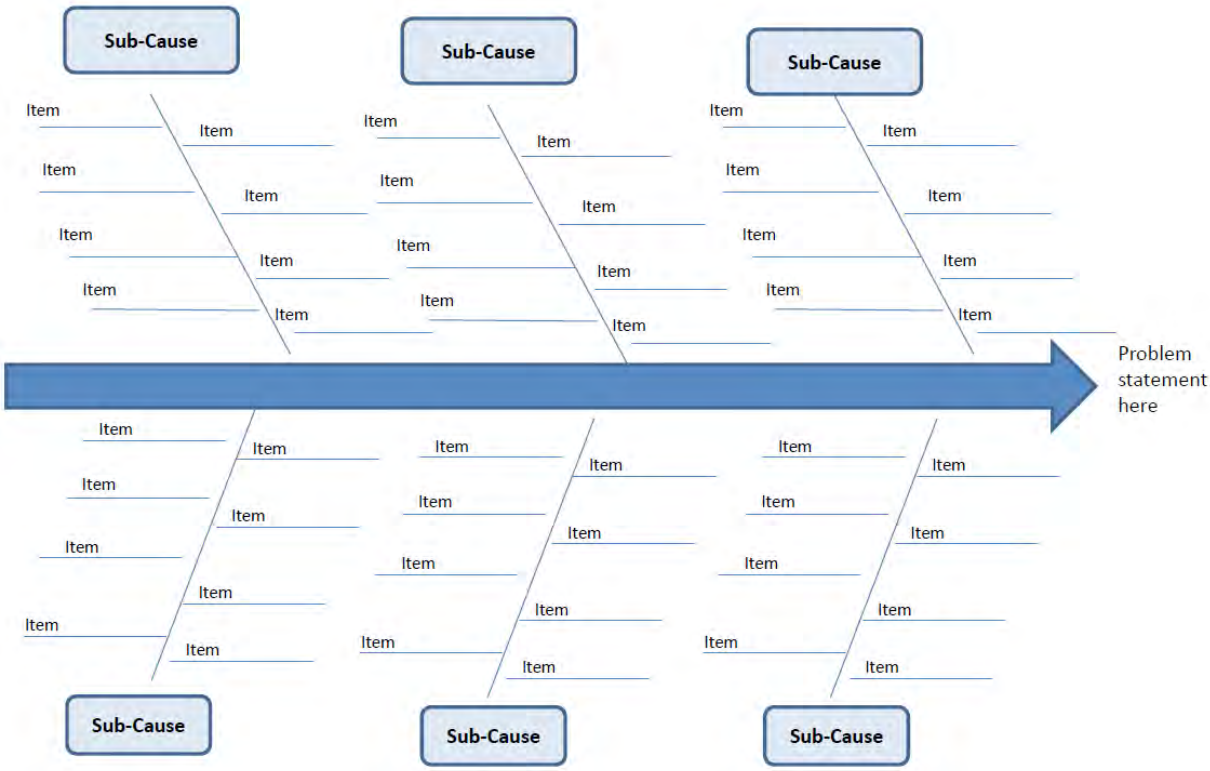
twitter.com/@millionheartsus

Appendix B: Using Simple Quality Improvement Tools

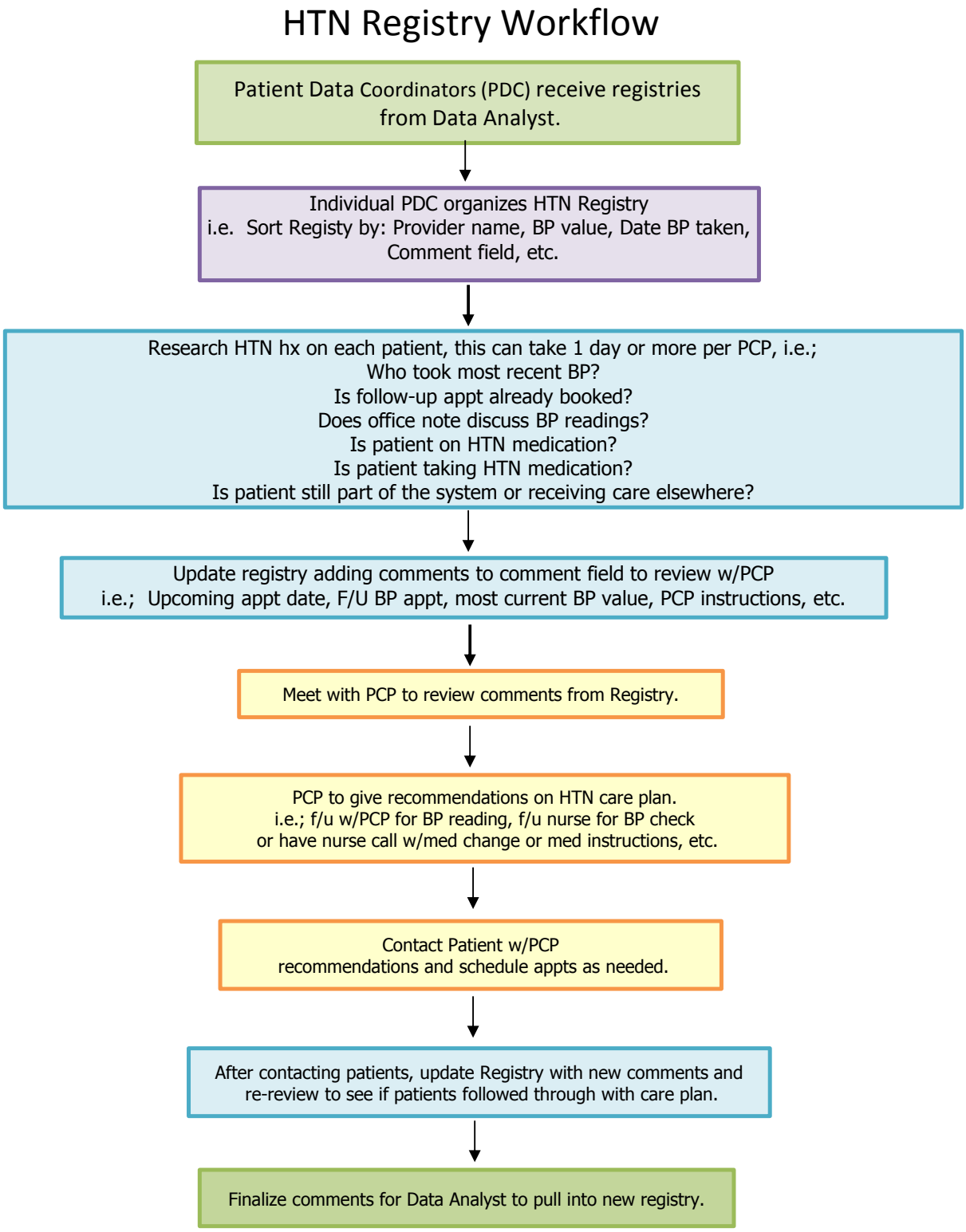
Flowcharting uses simple symbols to describe process. Flowcharts are best created by those individuals who are on the front lines of the workflow.



The Cause and Effect Diagram (Fishbone Diagram) is a simple ways to help stakeholders identify challenges and solutions.



Appendix C: Registry Management Flow Chart



Appendix D: Sample Job Description for Registry Coordinator

JOB TITLE: Registry Coordinator
OSHA LEVEL: III
DEPARTMENT: Primary Care, Family Medicine, Pediatrics
REPORTS TO: Department/Practice Manager

SUMMARY:

Under general supervision from the Department Manager and in collaboration with the Care Coordinator, understands population health tools and data, and provides support to clinical teams to use tools and data to improve patient care.

RESPONSIBILITIES:

- Analyze data from EHR and public/commercial payers to identify gaps in care and to identify patients who might benefit from care coordination
- Assimilate data from multiple sources into a format and display that is meaningful to use by clinical teams
- Distribute data to clinical teams to act on
- Educate clinical teams on how to use data at the team level
- Work with teams to identify best practices/trends
- Providing teams with data they need/want to further their improvement efforts
- Meet with providers to review population health data and help identify opportunities for improvement
- Generate individual patient letters and mass mailings as needed for population health management
- Utilize scheduling system and/or EHR as appropriate to foster population health data coordination
- Prepare and send reminders to clinical teams as prompts to be used in preparation for patient visits
- Review reports to identify patients with scheduled appointments in need of preventive or chronic care
- Attend and participate in staff meetings as needed
- Routinely report trends in quality metrics and recommend improvement opportunities to leadership
- Perform other duties willingly as required or assigned

REQUIREMENTS OF POSITION:

Education: High School Diploma, Bachelor's degree in health-related field preferred
Experience: Two years of experience in health care, education or related setting.
Skills: Excellent interpersonal, communication, and telephone skills;
Ability to handle confidential material with maturity; sensitivity, and discretion;
Strong computer skills including experience with publication software; Strong organizational skills;
Ability to work both independently and as part of a high functioning team.
Physical Requirements: Sight – Speech - Hearing - Touch - Grasp - Finger dexterity

Appendix E: Nashua's Million Hearts Fact Sheet

Million Hearts™
Greater Nashua

Be one in a MILLION HEARTS™

Preventing 1 million heart attacks and strokes over 5 years

The City of Nashua Division of Public Health and Community Services has partnered with Lamprey Health Care to increase awareness about heart disease prevention and empower individuals to take control of their heart health.

The Million Hearts™ team of Nashua hopes to achieve the following:

- Improve hypertension control to reduce heart attacks and strokes among our target population using evidence based practice.
- Build the bridge between public health and health care by implementing a system wide approach that encourages collaboration among various sectors including public health, health care, oral health, higher education and community services.
- Develop a standard competency among all participating sectors to accurately assess blood pressure and provide heart health education.

In November 2013, the state of New Hampshire was selected to participate in Million Hearts™, a national initiative to prevent 1 million heart attacks and strokes in the U.S. over the next 5 years. The cities of Nashua and Manchester have been selected to pilot this program by building upon existing relationships between their local health departments and community health centers to improve on blood pressure control through public health and clinical health integration.

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Funding and support for this project is provided by the Association of State and Territorial Health Officials (ASTHO) 2013. www.astho.org .

astho™

12/5/2013

Appendix F: CMC/DHK Community Hypertension Brochure

Websites to learn more about controlling your blood pressure

www.heart.org & www.hearthub.org
American Heart Association (AHA)
Website with excellent resources for general heart health

www.mayoclinic.com
Mayo Health Oasis
Website with excellent resources for patients, particularly using search terms "hypertension," "blood pressure," and "home monitoring."

www.NHLBI.nih.gov/hbp
National Heart, Lung & Blood Institute (NHLBI)
Your Guide to Lowering High Blood Pressure
Website with excellent resources including online catalog of materials such as "Facts about Heart Disease and Women: Preventing and Controlling High Blood Pressure," "Facts about Lowering Blood Pressure," "Facts about the DASH Diet," and "Your Guide to Lowering Blood Pressure."

www.bplog.com
Online blood pressure log allowing one to track and chart blood pressure. Share your experiences with others in an online forum.

www.cheshiremed.org/highbp
CMC/DHK Website
Resources and tools to manage high blood pressure

Cheshire Medical Center
Dartmouth-Hitchcock Keene
580-90 Court Street, Keene, NH 03431
(603) 354-5400 I cheshiremed.org

Discussion With My Doctor –
My Health Improvement Plan:

What is my main issue?

_____

_____

_____

Ways I can improve:

- ☐ Reduce BMI
- ☐ Eat a DASH diet
- ☐ Decrease dietary sodium
- ☐ Exercise
- ☐ Limit alcohol
- ☐ Avoid tobacco

Why is it important for me to do this?

_____

_____

_____

Notes: _____

_____

_____

_____

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Dartmouth-Hitchcock Keene

HIGH BLOOD PRESSURE AND YOU

When it comes to blood pressure control, you need to know your numbers.

Please call your health care provider with questions or for the information you need to manage your blood pressure.
(603) 354-5400

Appendix F: CMA/DHK Community Hypertension Brochure

What is Blood Pressure?

Consistently high blood pressure will increase your risk of heart disease, stroke and kidney disease.

Blood Pressure is a measure of how hard the blood pushes against the walls of your arteries as it moves through your body. If your blood pressure stays up, you have high blood pressure. Another name for high blood pressure is hypertension.

Your blood pressure consists of two numbers: systolic and diastolic.

Systolic Pressure – the top number indicates how hard the blood pushes when the heart is pumping.

Diastolic Pressure – The bottom number indicates how hard the blood pushes between heartbeats, when the heart is relaxed and filling with blood.

Several things are known to raise blood pressure, including being very overweight, drinking too much alcohol, having a family history of high blood pressure, eating too much salt and aging.

	Systolic		Diastolic
Normal	<120	AND	<80
Pre-hypertension	120-139	or	80-89
Hypertension, Stage 1	140-159	or	90-99
Hypertension, Stage 2	>160	or	>100

Living with High Blood Pressure

Lifestyle changes are important to help control high blood pressure, especially if you have other risk factors for coronary artery disease and stroke.

Even if your doctor has prescribed medicine for you, you can still take many steps at home to lower your blood pressure and reduce your risk. Some people can even take less medicine after making lifestyle changes.

Recommended Lifestyle Changes

Strive for a healthy BMI (Body Mass Index) of 18.5 – 24.9
Even a 5-10 lb. weight loss can reduce blood pressure.

Eat a DASH (Dietary Approaches to Stop Hypertension) diet rich in fruits, veggies and low fat dairy
may decrease BP by 8-14 points

Decrease dietary sodium to 2300 milligrams or less per day
may decrease BP by 2-8 points

Regular aerobic physical activity 30 minutes per day
may decrease BP by 4-9 points

Limit alcohol consumption
may decrease BP by 2-4 points

Risk Factors for Cardiovascular Disease (CVD)

- Hypertension
- Obesity – BMI >30
- High Cholesterol
- Diabetes Mellitus
- Cigarette Smoking
- Physical Inactivity
- Age >55 men >65 women
- Family History of Premature CVD >55 men >65 women

Your Medical Home Team will monitor your blood pressure closely to prevent complications related to hypertension. Routine blood work and physical exams will monitor for targeted organ damage. It is important that you make and keep your routine appointments with your provider.

You have the power and you have the choice!

Ask your Care Team how you can start making changes today.

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